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COMPUTERWORLD

WINDOWS APPLICATIONS: BUILDING THEM, USING THEM. SEE CW GUIDE, PAGE 121.

CA, EDS settle, plan new deals

By Thomas Hoffman

In a stunning settlement that ignited a chain of interrelated events, Computer Associates Ioteroatioo-al, Inc. and Electronic Data Systems Corp. last week agreed to abandon their 28-month, multi-billion-dollar legal battle.

The out-of-court agreement paved the way for EDS parent company General Motors Corp. to sell or spin off EDS, which in turn enabled CA to overcome its last major hurdle to acquiring The ASK Group, Inc. for $305 millioo. EDS is the largest shareholder, with an 18% ownership of ASK, so a buyout of the database vendor was highly unlikely while CA and EDS were locking legal horns.

▶ CA Chairman Charles Wang (left) and EDS Chairman Les Alberthal buried the legal hatchet last week. "We realized we weren't as far apart as we had thought," Wang said. "Lawyers and accountants only got in the way."

In a separate but related action, the chief executives of EDS and Sprint Corp. declared their intention to merge those two companies (see related stories page 16).

Customer impact

Settling the CA/EDS lawsuit does more than save the companies legal expenses, which legal pundits placed in the seven-figure range after two years of extensive discoveries, motions and maneuvers.

The CA/EDS resolution "removes any thorns for customers who are considering doing business with either company," said Richard Corbin, vice president of information systems at Occidental Fire & Casualty Co. in Raleigh, N.C.

Although EDS executives claimed their stormy legal struggle with CA was having no impact on either customer relationships or revenue stream, sources close to the $8.6 billion Plano, Texas-based outsourcer said otherwise.

The CA legal battle "was starting to interfere and delay custom-

Settlement, *page 16*

Under the agreement, EDS will become a "super" value-added reseller for up to $100 million worth of CA-Unicenter software.

Intel fortress under attack from all sides

By Michael Fitzgerald and Jaikumar Vijayan

With nine consecutive quarters of record sales and profits, Intel Corp. seems entrenched as "king of the desktop hill." But being on top has made the world's largest chip maker a prime target for attack. And there are those who think that in the short term, Intel may slip a mite from its perch.

Despite the rosy profit picture, appearances can be deceiving. This has not been Intel's best year. Major customers such as Compaq Computer Corp. have annouoced systems that use chips from archrival Advanced Micro Devices, Inc., and IBM plans to use Cyrix Corp.'s technology as the core of future processors in IBM PCs.

Times are a-changin'

Bruce Claflin, general manager of product and brand development at IBM PC Co., praised Intel for innovation and quality. But he promised, "You will see non-Iotel chips in future PC Co. products."

Intel, *page 173*

Software delays wreak havoc

Late, unstable wares plague IS projects

By William Brandel

Broken promises, missed deadlines and unstable first releases. Welcome to the spring ritual of Comdex/Windows World in Atlanta this week.

While past gatherings have heralded the launch of new products, it appears this show may end np producing one of the greatest clouds of vaporware ever to shroud the PC software industry.

The result is that while a downsizing information systems community tries to use shrink-

Late, *page 14*

BROKEN PROMISES

Microsoft's history of delivering systems as much as six to nine months late has often sent independent software vendors and customers scrambling to reset their own schedules

PRODUCT	ORIGINAL PLAN	ACTUAL SHIP DATE
Windows 3.0	End of 1989	May 1990
Windows NT	End of 1992	August 1993
Chicago (Windows 4.0)	End of 1994	Early 1995*
Daytona (NT 3.5)	End of June 1994	July/August 1994*
Cairo	First half of 1995	Second half of 1995
Hermes (SMS)**	End of 1993	Summer 1994
EMS	End of 1993	Second half of 1994

*Industry predictions **Systems management software

Microsoft tardiness can derail developers

By Ed Scannell and Stuart Johnston

Microsoft Corp.'s consistently poor track record for delivering systems on time continues to disrupt developers' product development cycles and, ultimately, the purchasing plans of corporate information systems shops.

While this failure to live up to one's word is endemic in the microcomputer software industry, when a key provider of systems software like Microsoft does it, it often creates waves with crippling effects.

"If you believe their press re-

Microsoft, *page 14*

Internet debates metered billing

By Gary H. Anthes

As the NSFnet backbone begins its transition from government control to commercial operation, some Internet users are worrying about higher prices and reduced access to network resources.

The Washington-based Taxpayers Asset Project recently distributed a draft letter on the Internet to the National Science Foundation, which funds the NSFnet. The TAP letter urged the NSF to create a consumer advisory board to help set pricing and other policies for the network. According to TAP, the companies taking control of the network plan to change the current billing arrangements — typically involving a flat monthly charge for a fixed bandwidth connection — to usage-based or "metered" billing.

Internet traffic via NSFnet grew 500-fold from January 1988 to December 1993 — from 17G bytes to 9.2T bytes of data.

Killer prices

TAP, a group founded by Ralph Nader to monitor the management of government property including information systems, worries that such a change in control of NSFnet could lead to higher charges and unpredictable bills for Internet service. The group also said a per-transaction pricing scheme would deal a deadly blow to many of the bulletin boards and other services that each day broadcast huge volumes

Internet, *page 10*

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What's Inside

May 23, 1994

The Killer APP Crew

WITH THE LAUNCH of their Visicalc spreadsheet, Bob Frankston, Julian Lange and Dan Bricklin (clockwise from top) set the PC industry ablaze. We recently asked them about current killer apps (they're high on Internet mail), Microsoft's antitrust woes (essentially a good thing) and IBM's PC software prospects (good, but. . .)

See In Depth, page 145

STELLA JOHNSON

Executive Briefing

In a stunning settlement that precipitated a chain of industry-related events, **Computer Associates** and EDS agreed to bury the hatchet on their 28-month-long legal battles. The out-of-court agreement paved the way for **General Motors** to sell or spin off EDS, while CA overcame its last major hurdle to acquire **The ASK Group**. *Page 1*

First there were TQM and BPR. Now a new buzzword/acronym may be about to hit IS: It's activity-based costing, or ABC, a radically different model for cost-accounting systems. *Page 107*

Some Internet users worry about higher prices and reduced access to network resources, while they watch control of the NSFNet backbone shift from the government to commercial operators. *Page 1*

The state of California will review its costly information technology projects, including the $44 million **Department of Motor Vehicles** project to overhaul aging computer systems. Last week, a California Senate subcommittee withheld five months of proposed funding from the state's Office of Information Technology, pending the agency's delivery of a plan to take corrective action. *Page 6*

Republic New York spent the last two years spreading the data processing wealth among its branch banking offices. Now the company is using its distributed IBM RS/6000 network to carry out a more top-down IS project: putting all of its product information and banking policies and procedures on-line to ensure that all branches are working from the same script. Republic hopes to improve the reliability of the information its employees give out and reduce the time it takes to access the data. *Page 85*

Retail giant Nordstrom's information systems department goes to great lengths to satisfy its internal customers — including deploying **Microsoft**'s Windows NT Advanced Server two months before it was commercially available. *Page 61*

Being environmentally correct can also help the bottom line, as the **Nature Conservancy** has learned with its network-based payment system. *Page 69*

Database administrators who are client/server-bound often lack the necessary networking background. *Page 150*

The 5th Wave *by* Rich Tennant

NEWS

- **Novell** delivers a module to help introduce **IBM host messaging** users to some of the benefits of LAN mail. It is set to tie NetWare 4.x into directory and security standards. *Page 4*
- IBM prepares midrange **RS/6000s** based on PowerPC and Power2 RISC chips. *Page 6*
- Questions surface about the future of **Micro Channel Architecture** as IBM announces its first EISA-based server. *Page 8*
- Vendors will largely be selling futures when **Comdex/Spring '94** opens this week. *Page 15*
- **ASK users** hope CA's buyout of their database and manufacturing applications supplier will relieve ASK's money troubles. *Page 16*
- **Amdahl** will formally introduce its Xplorer 2000 massively parallel database server line today. *Page 20*
- **Digital** has punched up its PC product lineup with 13 models. *Page 24*

COMPUTER INDUSTRY

- Various **networking stocks** dip after Cisco's big profits aren't enough to please analysts. *Page 32*

DESKTOP COMPUTING

- IBM officials now say they will offer up their own **OS/2 for the PowerPC** before they support Microsoft's Windows NT. *Page 43*

WORKGROUP COMPUTING

- A new auditing tool promises to make life — and **network administration** — easier for Novell NetWare managers. *Page 61*

ENTERPRISE NETWORKING

- **TCP/IP** is gaining ground as an enterprise-wide transport mechanism. *Page 69*

LARGE SYSTEMS

- **Infomart** is taking on systems integration and testing in addition to selling hardware and software. *Page 85*

APPLICATION DEVELOPMENT

- More vendors tout the higher-end capabilities of their **client/server** development tools. *Page 97*

MANAGEMENT

- **Chief information officers** who bring only technical skills to the job need to re-engineer themselves in a hurry. *Page 110*

CW GUIDE

- **OLE 2.0**, Microsoft's scheme for making applications easier to use, is strong on consistency but weak on versioning, tracking and security for objects. Yet Microsoft's Visual Basic 3.0 and Office, which feature the most advanced OLE implementations, receive high marks from users in the Firing Line and Buyers' Satisfaction Scorecard surveys. *Page 121*

CAREERS

- Advice from **Lotus Notes** administrators. *Page 151*

MARKETPLACE

- Readers recommend cool tools. *Page 161*

COMMENTARY

- The new computing paradigm is still heavily dependent on big-iron systems, **Bill Laberis** notes. *Page 36*
- **Michael Cohn** comes up with the Tuesday afternoon solution to user demands. *Page 37*
- **Patricia Seybold** says the waterfall method of application development has been replaced by the workflow method. *Page 37*
- **Mitch Betts** explains why the information superhighway is subject to the same political hassles as any other public infrastructure. *Page 69*
- **Jeff Kaplan** says outsourcing vendors can help IS stay focused on end users' needs. *Page 85*

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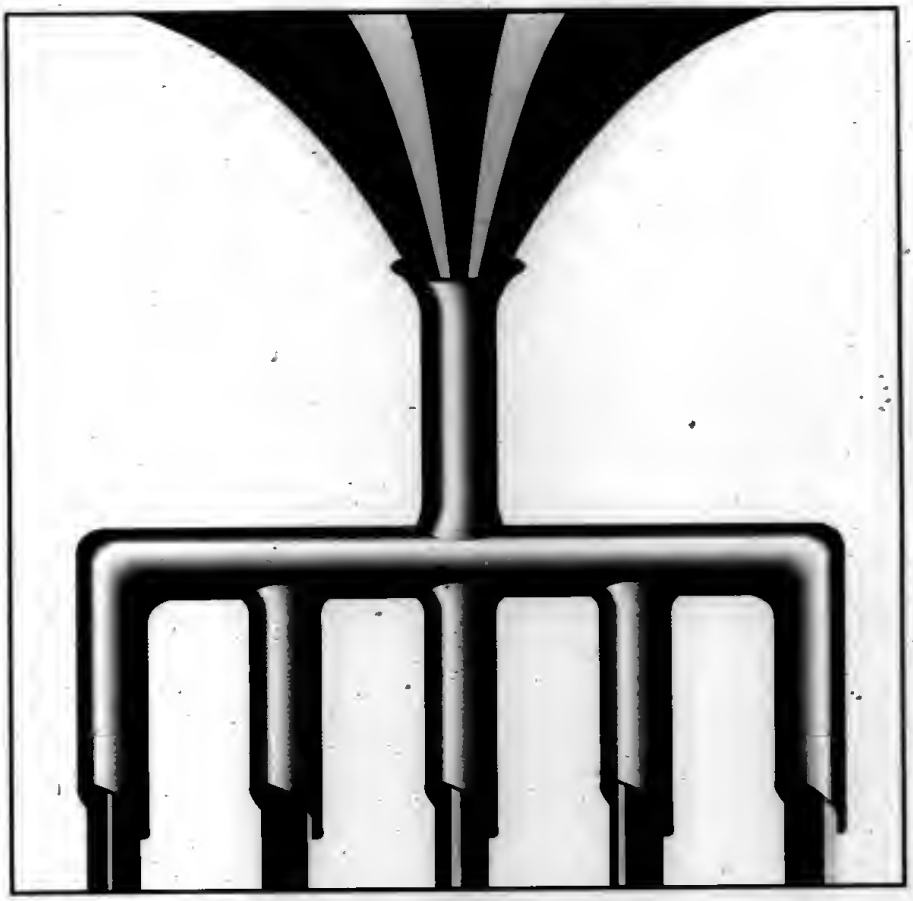

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Novell to users: DCE support coming

By Elisabeth Horwitt

■ Far from rejecting the Distributed Computing Environment (DCE) as some recent reports have claimed, Novell, Inc. is on the verge of delivering support for the Open Software Foundation's (OSF) standard.

That support will include X.500-based directory specifications, Kerberos-based authentication and remote procedure calls (RPC), a company executive confirmed last week.

Novell will soon sign a contract with Gradient Technologies, Inc. in Marlboro, Mass., to provide DCE support for UnixWare by the end of this year and for NetWare 4.1 by the end of 1995, said Bill Mason, Novell's senior manager of business development.

Novell's move to DCE is in response to a significant portion of its customers, particularly in the F500 bracket, who have been clamoring for a standardized way to provide a "single log-on, manageability and administration" of resources across a broad span of host environments, Mason said.

Morgan, Lewis & Bockius is one of a number of Fortune 500 companies that would love a standardized way to implement and administer security, authentication and log-ons across multivendor client/server systems and applications.

"In the meantime, we are doing what everyone else is doing," said Donald Sternfeld, director of information systems at the Philadelphia law firm. That means using one set of log-ons and passwords for LAN systems, another for hosts and yet another for messaging.

"Having to deal with all those different passwords and log-ons is a turnoff for users; they may stop using the systems," Sternfeld said.

Full compliance ahead

If DCE continues to mature, Novell eventually intends for NetWare and UnixWare to be fully DCE-compliant, Mason said. That compliance will allow the following:

- Applications on Novell servers will be able to communicate with other applications via DCE RPCs.
- Companies will be able to implement a single authentication system across Novell and other DCE-compliant platforms based on OSF's Kerberos-based security specification.
- Applications and users will be able to access resources transparently across NetWare Directory Services (NDS) and the DCE version of X.500.

Gradient gateways will provide all of the DCE capabilities listed above, yet performance is likely to be slower than the future native implementation, Mason acknowledged.

Novell is also working with several OSF founding members to ensure DCE interoperability across NetWare and leading host environments, Mason said. IBM, Hewlett-Packard Co. and Digital Equipment Corp. are all likely candidates, he said.

Working with OURS

In addition, Novell and other client/server vendors are working with the Open User Recommended Solutions (OURS) organization to create a single security/log-on standard, Mason said. OURS is a consortium of large corporate users who work to better define their needs to vendors in areas such as license management, security and network management.

Microsoft Corp.'s Windows NT has a fully DCE-compatible RPC now, and with its forthcoming object-oriented Cairo operating system, it will support a Kerberos-compliant security system, a spokesman said last week.

Microsoft will provide X.500 directory services with the Enterprise Messaging Server due out later this year, as well as an enhanced version of X.500 as its global directory for Cairo, he added. The company has been working to scale down the above protocols — all memory hogs — so they can run comfortably on Windows PC, the spokesman said.

DCE checklist

NOVELL'S EXPECTED DCE SUPPORT WOULD ADDRESS SEVERAL USER ISSUES

Why is client/server a major networking problem?

BASE: 50 RESPONDENTS. MULTIPLE RESPONSES ALLOWED; TOP ANSWERS LISTED

Source: Salomon Brothers, Inc., New York

More security

Novell plans to introduce enhanced NetWare 4.x security. This will include a utility for monitoring directory and log-on implementations to ensure compliance with corporate policy; and a utility for centrally monitoring usage, log-on attempts and changes to access rights across the network.

Doesn't add up

Of 50 corporations surveyed by Salomon Brothers, Inc., 21 said they plan to deploy NetWare 4.x in the next 12 months. But, the average percentage increase expected for spending on NetWare was only 6%.

Firefox to ace Novell

Firefox, Inc. expects to ship X.500 support for NetWare 4.x by year's end, well ahead of Novell's tentative delivery date.

The San Jose, Calif., vendor plans to ship an implementation of the X.400 messaging and X.500 directory standards on Novell's UnixWare in the third quarter and a NetWare Loadable Module version for NetWare 4.x by year's end, said Lynn Jessup, director of engineering.

Called FX400, the product includes a gateway that is said to enable NDS nodes to access resources via X.500 and vice versa. It will support Novell's Global Message Handling Service as well as a variety of PC Mail systems, such as Lotus Development Corp.'s CC:Mail, Firefox said.

Grumman Data Systems plans to evaluate the package as a way to "set up a common naming service whether you're on Novell or Unix" to make resources on NetWare and Unix servers reachable "without heroic efforts," said George Sullivan, a senior technical specialist at Northrop Grumman Corp.'s IS division in Bethpage, N.Y.

FX400 will run over Novell's IPX/SPX, TCP/IP and Open Systems Interconnect transports. No pricing information was available. —*Elisabeth Horwitt*

Novell dangles Global MHS to lure IBM users

By Lynda Radosevich

In an effort to entice IBM mainframe users to its LAN messaging service, Novell, Inc. last week introduced an aggressively priced gateway that enables mainframe messaging users to access the Internet via Novell's Global Message Handling Service (MHS).

The NetWare Global MHS to Profs gateway links users on IBM's Professional Office System (Profs) and OfficeVision/VM to Novell NetWare LANs and Global MHS. Using the gateway, mainframe users can exchange mail with any MHS LAN mail system and send messages through MHS to public systems such as the Internet.

While Profs gateways that enable Internet connections are available now, generally they are expensive and complicated compared with the $4,995 Novell alternative, analysts said.

For example, Profs/OfficeVision gateways from Microsoft Corp. cost $15,000; under a new pricing model, they cost $8,000 from Lotus Development Corp.

"There's an old rule from the mainframe days that if you don't charge at least $10,000 for a gateway, MIS won't take it seriously. By going below $5,000, Novell is going to get MIS' attention," said Eric Arnum, editor of "Electronic Mail & Micro Systems," an industry newsletter in Washington.

Requires no code

Another key benefit is that Novell's Profs gateway does not require any code to run on the mainframe, according to Novell officials interviewed last week. But while competitors' gateways generally do not require mainframe software, the former Novell solution, a System Network Architecture Distribution Services module, does, they conceded.

"Doing anything on an IBM mainframe is not trivial. If you don't have to run a piece of the software in that environment, it is less expensive and you don't have the problems of mainframe integration and configuration," said Mark Gibbs, president of Gibbs & Co., a consulting company in Ventura, Calif.

However, if users want to use a corresponding directory synchronization component of the Profs gateway, they will have to run software on the mainframe, Novell said.

The IBM mainframe messaging market is attractive to Novell because there are still roughly 4.5 million Profs and OfficeVision users, analysts said. Gaining acceptance among those users is key to the company's efforts to stimulate interest in Global MHS, which Novell has had trouble marketing in the past. Now the company has made Global MHS, which is an enterprise version of MHS, a major part of its NetWare strategy (CW, April 4).

However, for the state of Idaho, which tried integrating Novell LAN and IBM host messaging systems last year, the Global MHS to Profs software is too late. "We're already weaning the last OfficeVision users onto LAN systems, so we're not going to need this now," said Jake Hoffman, the state's technology coordinator.

Calendar updating ahead

This summer, Novell will announce Global MHS modules that implement the calendaring specifications proposed by the MHS Alliance in January. The modules will enable MHS applications to update calendar transaction databases on host and LAN systems, a Novell official said.

Gentlemen, start your snails.

PC Magazine independently defined and ran a battery of real-world performance tests to compare database server software. PC Magazine states, "Oracle7 was the **hands down winner on our performance tests,** outperforming the others by a wide margin."

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"Oracle7 finished the entire test suite in less time than most took just to load and index our data."

PC Magazine

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"Oracle7 completed the queries in a blistering 47 minutes, three times as fast as...the other products."

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PC Magazine

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"Oracle7's read-consistent model and record level locking helped it breeze through the test."

PC Magazine

Just to be fair, here's what PC Magazine had to say about the other guys:

Informix OnLine *"Only after days and days of repeated crashes were we able to obtain a full set of results."*

Ingres Server *"...we would not recommend it because of the showstopping multi-user bug we encountered."*

Gupta SQLBase *"...took an unthinkable 60 hours to load the tables and then crashed on the index builds..."*

For your copy of the complete PC Magazine article, including test results call 1-800-633-1071 Ext.8129.

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News Shorts

Corporate users join forces

The **Technology Managers Forum International** (TMFI), a new organization introduced last week, will focus on information exchange among users and technology providers as well as on corporate buyers' concerns. The forum will publish a quarterly newsletter, conduct informal research and commission formal research. It also plans to offer a series of seminars on technology topics. Those interested in more information can contact TMFI's executive director Priscilla Tate at (212) 787-1122.

Apple and Symantec team up

Apple Computer, Inc. and **Symantec Corp.** last week announced a cross-licensing agreement. Symantec will license Apple's PowerPC code-generation technology and Apple's debugger, linker and related tools. For its part, Apple will license Symantec's C++ compiler for use in a future release of its Macintosh Programmer's Workshop (MPW) compiler for the Power Macintosh. In addition, Symantec announced that its new Symantec C++ 7.0t compiler for MPW supports development for Apple's OpenDoc technology.

HP results: Same story, new twist

Despite some weakening in two of its traditionally strong product areas — workstations and laser printers — **Hewlett-Packard Co.** last week reported another round of strong financial results. HP said that for the second quarter ended April 30, revenue jumped 23%, from $5.1 billion to $6.3 billion, and earnings increased 18%, from $347 million to $408 million. Workstation sales declined because users were awaiting new products that HP announced last week, HP Chairman Lewis Platt said.

Vendors sign up for storage standard

IBM, Siemens/Nixdorf Informationsysteme AG and 17 other companies announced plans to support a Serial Storage Architecture interface developed by IBM for exchanging data between computer systems and storage devices. The interface supports full-duplex transmission rates of 20M byte/sec. in both directions for an aggregate bandwidth of 80M byte/sec.

Wireless in LA

Nextel Communications, Inc. said it is offering commercial service over its digital wireless network in the Los Angeles area. Nextel, a specialized mobile radio vendor backed by MCI Communications Corp., uses Motorola, Inc.'s Integrated Radio System as the base technology for its network. Nextel can be used for either voice or text transmissions. Nextel also said it will spend $200 million to build networks in Baltimore/Washington, Boston, Detroit, Chicago, New York and San Diego.

SHORT TAKES The **U.S. Patent and Trademark Office** is reexamining a broad software patent granted to **Software Advertising Corp.** in La Costa, Calif., that seems to cover software-based advertising such as the Energizer Bunny screen savers.... **IBM PC Co.** cut prices on its ThinkPad 500 subnotebook and 350 and 750 lines of notebook computers by 8% to 31%.... **Legato Systems, Inc.** agreed to pay $1.1 million to **Cheyenne Software, Inc.** to settle litigation that arose out of a Legato advertisement that referred to Cheyenne's ARCserve product. Legato also agreed to withdraw the ad.... A **Hewlett-Packard Co.** HP/UX version of **Next, Inc.**'s NextStep object-oriented system shipped to beta sites last week. NextStep ports to Sun Microsystems, Inc.'s Solaris and Digital Equipment Corp.'s Alpha are due out before year's end.

California IS projects mismanaged

Lawmakers accuse technology office of misspending funds

By Jean S. Bozman

The California Legislature will review the state's $1.2 billion information technology budget following allegations by the legislative analyst's office that the Office of Information Technology (OIT) failed to properly manage some of its largest computer projects.

"Our review of the OIT's performance over the past several years indicates that the office has not fulfilled its leadership role and that this has resulted in a more costly statewide implementation of computer systems," states the analyst's supplemental analysis of the 1994-1995 Budget Bill for California. "Funds which could be used to develop new applications are used instead to pay for duplication and costly implementations."

As a result, a California State Senate subcommittee withheld five months of proposed funding for the OIT's 1994-95 budget last week and approved a state management review of OIT, a senate spokesman said.

Those Senate hearings — and separate hearings by the transportation subcommittee of the Assembly — followed revelations earlier this month that the Department of Motor Vehicles spent $44 million for a project that failed to produce any working applications [CW, May 9].

The DMV project is just one of several megaprojects that were inefficiently managed, said Craig Cornett, director of state administration for the legislative analyst's office. The report cited other problems, including incompatible computer systems statewide, poor access to departmental databases and a lack of standards.

Given a mission

On May 12, Gov. Pete Wilson issued an executive order to create a task force to review how the state manages and oversees its computer purchases. The task force of technology experts — to be selected from industrial corporations and nonprofit agencies — is supposed to submit a proposal for a strategic information technology plan for the state by Aug. 15.

However, OIT director Steve Kolodney responded last week that the legislative analyst's charges were unfair. "The law itself does not give substantial authority for oversight other than financial oversight," he said. "So we have no explicit authority to go into departments and to do management reviews or audits of the status of their projects." Instead, the OIT — which is part of the Department of Finance — merely funds proposed technology projects, he said.

He also confirmed that the Senate subcommittee approved the OIT's budget only through February 1995, pending a plan for corrective action.

Although the state Senate or Assembly can reject the legislative analyst's findings, the two legislative bodies will consider supporting some or all of them by June after meeting in joint conferences on the 1994-95 budget.

IBM unveils RS/6000s to challenge HP boxes

By Jean S. Bozman

IBM will this week unveil new RS/6000 Unix workstations and servers, including the first desktop RS/6000 based on the Power2 chip, according to sources close to the company. The announcement is expected to aid IBM's efforts to keep pace with rival Hewlett-Packard Co. in the midrange Unix market.

IBM already uses Power2 technology in its high-end Unix servers and Powerparallel systems.

Analysts said they expect to see several desktop workstations and deskside servers based on the PowerPC 601 and Power2 RISC chips. IBM is expected to use an 80-MHz PowerPC 601 chip [CW, May 2]. It is not yet ready to introduce its PowerPC 604 chip, analysts said.

IBM is also expected to show two-dimensional graphics accelerators and a fiber channel adapter to speed data flow for video and other high-bandwidth applications in distributed Unix networks.

Some analysts see the use of the PowerPC chip as pushing performance for desktop users. "The implication is that they will have very high uniprocessor desktop performance," said Andrew Allison, a RISC consultant who edits the newsletters, "Inside the Computer Industry" and "Benchpress."

Slow move to SMP

A powerful uniprocessor such as the Power2 would remove the need to use dual-chip symmetrical multiprocessor (SMP) designs.

"The case has not been made that SMP on the desktop buys you very much, as it would in a server," Allison said. Workstations host CPU-intensive calculations that are hard to adapt to multithreaded tasks, such as database applications, he said.

Other vendors, including Sun Microsystems, Inc., have boosted desktop performance with dual-chip SMP designs, analysts noted. However, IBM is not expected to announce its SMP RS/6000 servers until this summer [CW, Feb. 7]. That would make IBM the last of the major RISC-based Unix system vendors to field SMP Unix servers, observers said.

HP announces midrange Unix workstations. See page 63.

Dell recalls monitors

By Michael Fitzgerald

Dell Computer Corp. last week recalled some 63,000 monitors because they may overheat and even catch on fire.

The units in question are the DL-1460NI 14-in. Super VGA color monitors, sold in 1992 and 1993.

In a statement released with the U.S. Consumer Product Safety Commission (CPSC), Dell said it had received 32 reports of the monitor's overheating, and in some cases it had caught on fire.

The DL-1460NI was sold by Dell directly and through the following retailers: Sam's Club, Costco, Price Club and CompUSA. Dell no longer offers the model. The monitor number can be found on the back of the machine.

Customers with a DL-1460NI should unplug the monitor and call Dell at (800) 913-3355 between 9 a.m. and 9 p.m. Eastern Standard Time (EST) Monday through Friday or between 11 a.m. and 3 p.m. EST on Saturday. Dell will arrange for pickup and will repair the monitors free of charge.

A Dell spokeswoman said the recall will not have a material impact on the company's financials.

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IBM adds EISA, PCI bus servers to its MCA line

By Jaikumar Vijayan

In what was perceived as a slightly belated but welcome shift in its low-end server strategy, IBM PC Co. last week announced a family of aggressively priced PC servers based on EISA and PCI bus architectures.

The announcement was greeted with enthusiasm by users and analysts who have long criticized IBM for the apparent stubbornness with which it stuck to its fast-fading Micro Channel Architecture (MCA).

'Biggest mistake'

"I think Micro Channel was the biggest mistake that IBM ever made. I'm glad they have woken up," said Victor Mutnick, corporate vice president at New York Life Insurance Co. in New York. "I like the idea that IBM recognizes what the industry needed was just one server standard, not many."

As far as its service strategy, analysts agreed the announcement was a major step in the right direction.

"It is good to see that they are not wrapping themselves in a Big Blue blanket any longer," said Ray Boggs, a director at BIS Strategic Decisions in Norwell, Mass. "PCI and EISA are what the market wants," not MCA, he said.

The new multiple bus systems, which are based on Intel Corp.'s I486DX2 and Pentium 60-MHz processors, feature Peripheral Component Interconnect (PCI), enhanced integrated drive electronics and SCSI-2 support.

The line tops out with a Pentium 60-MHz-based server with 16M bytes of parity memory expandable to 192M bytes, with an optional 1G-byte hard drive and nine expansion slots.

The server supports most standard network operating systems, including Novell, Inc.'s NetWare, IBM's OS/2, Microsoft Corp.'s Windows NT and Banyan Systems, Inc.'s Vines.

Though analysts and users said they see the Extended Industry Standard Architecture (EISA) announcement as hastening the demise of MCA, IBM is trying to position its new EISA class of servers as a separate line of stand-alones that will have little impact on its other lines, especially MCA.

Expanded mode

Specifications for IBM's new PC server

	Basic 486DX models	High-end Pentium models
	486DX2-66	Pentium-60
	PCI/EISA	PCI/EISA
	8M-byte parity	16M-byte parity
	256K bytes	256K bytes
	Enhanced IDE SCSI-2 (optional)	SCSI-2
	$2,499	$3,899

According to David Nichols, director of client/server solutions at IBM, the servers are aimed primarily at the stand-alone network market for users looking for 32-bit architecture. The company will continue to offer MCA to specific channels.

"The announcement [of EISA-based servers] will have no significance for Micro Channel products," he said.

But some remained unconvinced that IBM would be able — or even want — to justify two separate server lines based on totally different architectures.

"I think they are going to have a hard time keeping the channels separate," said Lynn Berg, an analyst at Gartner Group, Inc. in Stamford, Conn. "I would expect them to become more PCI-based across the board in the future."

Right now, continued support of both lines would create positioning problems for IBM, Berg said. "At some point they are going to have to explain their high-end strategy."

Analysts were also impressed with IBM's pricing strategy on the new server line. By introducing the servers at an entry-level price of $2,499, IBM has not just eliminated its premium price tags but has also aggressively positioned itself against vendors such as Compaq Computer Corp. and Dell Computer Corp., Berg said.

IBM delivers workflow engine

FlowMark provides users with access to LAN and legacy data

By Lynda Radosevich

IBM last week delivered the cornerstone to its workgroup software strategy with the release of FlowMark, a workflow management product that provides access to information in LAN and legacy applications.

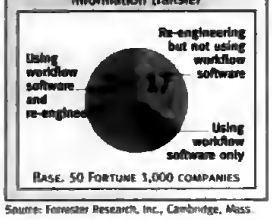
FlowMark is a client and server application that allows users to graphically model a business process and then automate the electronic portions of that process. For instance, an insurance company could build a workflow procedure that routes an application form to a sales assistant, automatically searches a client database and provides the information to the assistant.

FlowMark is of particular interest to IBM mainframe users, many of whom are planning to automate the flow of business information but are hampered by limited host connections in workflow products, users and analysts said.

"If connection with their standard products is inherent to the IBM workflow product, that sounds interesting," said Bill Mullin, vice president for special projects at Pfizer, Inc. in New York. "Today, people can do these connections on their own, but usually they are problematic."

Hand-in-hand

IBM's workflow strategy targets companies involved in re-engineering, a majority of which deploy workflow software to automate information transfer



Source: Forrester Research, Inc., Cambridge, Mass.

Because of its integration capabilities, FlowMark is the key platform for IBM's client/server workgroup strategy, which includes electronic messaging, groupware, calendaring and document management software, said Richard Sullivan, IBM's director of workgroup marketing.

FlowMark integrates mainframe and LAN-based applications using an object technology that separates business process rules from applications that users already have. It permits mainframe integration using IBM's Application Support Facility, CICS OS/2 or Message Queuing Interface. It can access information in host applications using Easel, an application development tool from Easel Corp.

The workgroup initiative is a major piece of Open BluePrint Model, a road map for client/server computing that IBM quietly disclosed roughly two months ago. Open BluePrint calls for IBM to integrate its client/server pieces so an end user will have to log in only once to access any IBM application.

IBM will deliver the BluePrint's workgroup integration piece in the fourth quarter, Sullivan said.

"What's really interesting is that IBM has a workflow story to tell at all," said Scott McCready, an analyst at market research firm International Data Corp. in Framingham, Mass. "We've seen plenty of vendors with workflow features and functions, but the question until now was, 'Why should IBM mainframe customers care?'"

How open is it?

Noting that FlowMark initially runs only on OS/2 clients and servers, McCready and others questioned the accuracy of the word "open" in Open BluePrint. However, IBM said it will ship Windows clients and AIX Unix clients and servers by year's end.

IBM still faces the challenge of explaining when customers should use FlowMark vs. applications based on Lotus Development Corp.'s Notes, which IBM also markets, analysts said. FlowMark is geared more to structured workflow processes that do not change much from week to week, whereas Notes-based workflow applications are more appropriate for ad hoc workflow, they explained. FlowMark costs $12,000 per server, $800 for a developer's client and $200 for a runtime client.

ThinkPad teams with CC:Mail and Advantis

By Lynda Radosevich and Michael Fitzgerald

IBM last week said it will bundle Lotus Development Corp.'s CC:Mail and Advantis network access software into its new ThinkPad notebooks [CW, May 16].

The package is meant to ease mobile users' task of exchanging electronic mail and faxes with the home office and with business partners on different systems. It includes a Windows version of CC:Mail that has drivers for the Advantis network.

Advantis, a joint effort of Sears, Roebuck and Co. and IBM, is a value-added network that has 13,000 customers and more than 1 million users in 90 countries. Advantis provides network management, custom network design and application development to its customers.

On the service end, IBM will take care of routing and converting the messages through various wired and wireless networks and E-mail systems. Also, IBM will offer 24-hour customer support.

Main advantage

"The advantage is I don't have to open up a special package for certain types of E-mail," said Bruce Linker, vice president of information systems at a major financial services firm in New York and a ThinkPad user. Linker said his shop uses Microsoft Corp.'s Mail package and is starting to use it in conjunction with Advantis to merge E-mail distribution.

CC:Mail and access to the Advantis network are part of a push by IBM to expand the usefulness of notebooks. They are also part of its broader "In Touch" strategy for offering a business messaging and data access network [CW, April 18]. IBM will provide further details on In Touch this week.

Beginning June 30, ThinkPads will ship with some 100M bytes of software preinstalled, including the Official Airline Guide's Flight Desk Worldwide Edition, Lotus Organizer, Lotus ScreenCam and SofNet FaxWorks.

A picture is worth a ~~thousand~~ 25,000 lines of code.

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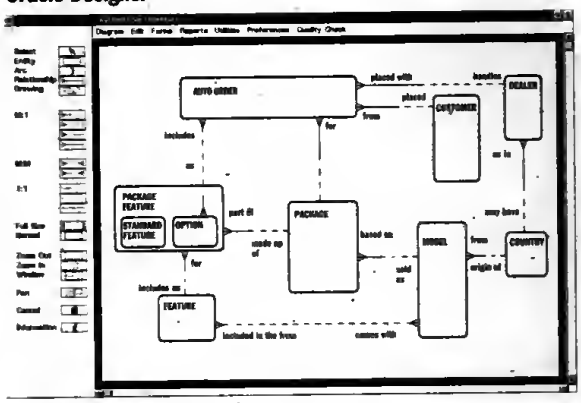

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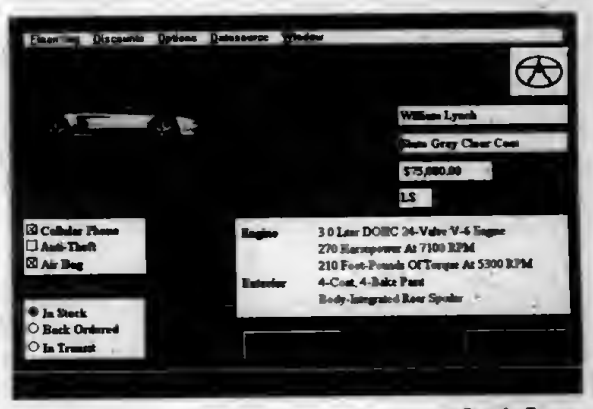

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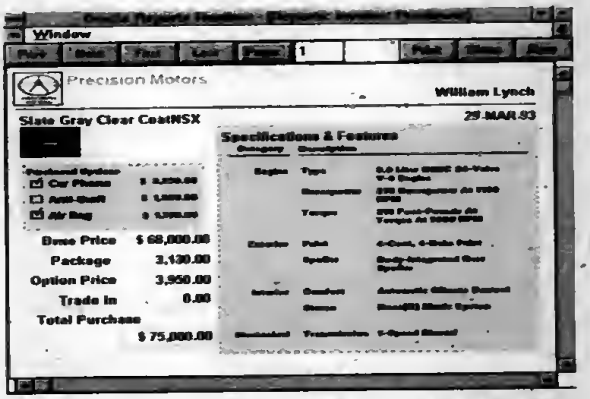

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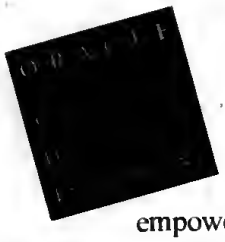

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Internet

CONTINUED FROM PAGE 1

of information to subscribers, essentially at no cost.

User privacy could also be threatened by billing mechanisms that track use of the Internet.

The NSFnet backbone is a major building block for the TCP/IP-based Internet and one of four public fiber-optic backbones in the U.S. These connect to one another and to regional networks, which in turn serve end users on LANs. NSFnet policies, procedures and applications typically are propagated throughout the global Internet.

Joel Maloff, an Internet consultant in Ann Arbor, Mich., said it is not clear whether corporate users would pay more or less under usage-based pricing, but he said a shift in that direction would require users to rethink their assumptions about the Internet.

"People are looking to the Internet to displace other expenses, such as Dialog or Mead Data, or to reduce the cost of fax or Federal Express," he said. "But if you change the billing algorithm, you change the displacement. You'll have to look again to see where is the value."

The pressure on telephone companies to move to metered billing will grow as companies increasingly use the Internet to bypass commercial phone networks, said James Love, director of TAP.

Bot Anthony M. Rutkowski, executive director of the Internet Society in Reston, Va., said fears of a move to usage-based Internet pricing are groundless. "The converse is true," he said. "The flat-rate-for-bandwidth approach of the Internet world is rapidly invading the [telephone company] world for other services."

Rutkowski said large corporate users demand the predictability ensured by flat-rate billing. He also said carriers and service providers have a strong incentive to avoid usage-based pricing because accounting and billing would be enormously expensive to develop and administer.

On the rise

From 1985 to 1994, the Internet grew from 200 networks to 21,000 and from 1,000 end-user computers to 2 million.

Yet some believe that some form of usage-based Internet pricing may be inevitable.

Hal Varian, an economics professor at the University of Michigan, recently posted a paper on the Internet. In it he noted that, "Within a year, any undergraduate with a new Macintosh will be able to plug in a video camera and transmit live videos home to Mom, demanding as much as 1M bit/sec. Since the maximum throughput on current backbones is only 45M bit/sec., it is clear that even a few users with relatively inexpensive equipment could bring the network to its knees."

No plan yet

In the meantime, the carriers involved in providing Internet services insist they have no immediate plans to move to usage-based billing, but they refuse to rule out the possibility. Sprint Corp., for example, said it had not decided how it would price its services and added that it had no plan that would result in usage charges for end users.

"The prices Ameritech charges to network service providers will include an installation fee and a monthly rate," said Mark Knopper, director of information infrastructure at Ameritech Corp. "There is no traffic-based charging."

Ameritech and Sprint are two of four companies recently given contracts by the NSF to manage Network Access Points, which are high-speed gateways connecting the networks of the midlevel regional networks and commercial Internet service providers. The four companies will charge service providers for internetwork traffic, while the service providers in turn will charge end users for Internet connections.

Ray Hoving, chairman of the Society for Information Management's National Data Highways Advisory Council, said he rejects the demands of some that the NSF seeks to control how service providers price NSFnet services. "The last thing we want is for prices on the Internet to be regulated," he said.

Beowulf is available ON THE INTERNET. SEE PAGE 77.

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HDS' RISC server plans still up in the air

Traditional parallel mainframes to ship in 1996

By Craig Stedman

■ Hitachi Data Systems Corp. last week confirmed that it expects to ship new emitter-coupled logic and parallel CMOS mainframes in 1996. But its plans for marketing a line of RISC/Unix servers remain unsettled despite a recent deal to buy PowerPC chips from IBM.

RISC servers will be the third leg in HDS' strategy, and it "certainly won't be longer than two years" before machines running Hitachi's HI-OSF/1 operating system are available, said Brian Walsh, HDS vice president of open systems. However, he added that specific RISC plans are still undecided.

While the PowerPC is its RISC chip of choice, HDS is not committing to shipment dates and may offer systems based on Hewlett-Packard Co.'s PA-RISC processors as an interim step, Walsh said. HDS also remains undecided about whether it will resell IBM's SP2 Powerparallel machine running AIX as a second RISC platform, an option available as part of parent company Hitachi Ltd.'s deal with IBM.

Wayne Martin, data center manager at Dialog Information Services, Inc., an on-line database service in Palo Alto, Calif., said the lack of a clear RISC strategy from HDS is forcing Dialog to turn to other server vendors.

Dialog has started a migration from HDS mainframes to client/server and is piloting a system based on Sun Microsystems, Inc. hardware for delivering information via electronic mail and fax. The firm plans to start testing a larger installation with both Sun and IBM RS/6000 systems in July, Martin said. HDS is "certainly not able to participate in these early rounds, and I think they're missing out on some opportunities there," Martin noted.

Rich Evans, an analyst at Meta Group, Inc., a consultancy in Westport, Conn., agreed that HDS' RISC plans "are kind of vague" and said the company needs to do some "real hard planning" in the next couple months to get into the server hall game. "The clock's ticking along," Evans said.

Evans noted that HDS and Hitachi have typically followed IBM's lead in mainframes — an approach they cannot emulate with RISC servers. "The server market is a lot more unfettered, and I don't think they've really sat down and figured out who they have to compete against," he said.

Sharper focus

One open systems product for which HDS has firmer plans is a parallel transaction manager, code-named BeTran, that company officials said should be ready for shipment late this year or in early 1995. BeTran will support the Osiris operating environment across all of HDS' systems and compete with IBM's CICS/6000 software and other Unix transaction managers.

Mainframe of mind

Hitachi Data Systems will field parallel CMOS mainframes within two years to match IBM and build another ECL host system

System/390 parallel CMOS platform:

Available:	Late 1996
Processor technology:	IBM CMOS chips
Performance:	39 MIPS per processors
Number of processors:	Up to 320 possible

Going West?

HDS plans to decide "very shortly" whether it will do any U.S. marketing of the PA-RISC servers that Hitachi sells in Japan, Walsh said. He did not rule out a decision by this week, when HDS plans to introduce a version of its Osiris open systems environment with a release of HI-OSF/1 based on the Mach 2.5 microkernel.

On the mainframe side (see chart), HDS plans to have a new traditional host system and a general-purpose parallel CMOS machine ready in 1996 [CW, April 25]. The timing of the parallel system depends on IBM shipping a similar machine in mid-1996.

Powersoft partners up

By Melinda-Carol Ballou

Third-party products and alliances designed to extend the range of PowerBuilder's capabilities will be central to the announcements slated for this week's Powersoft Corp. user conference, according to company officials.

Seeking to shore up its reputation for higher-end client/server development, Powersoft last week said it will announce interfaces between its PowerBuilder development tools and products from Transarc Corp. and Legent Corp.

These announcements are the first in a series scheduled over the next few months aimed at helping the company scale up the client/server development food chain, company officials said. Some customers said they have begun to hit the wall with PowerBuilder as they attempt to move beyond client/server decision support to create more complex, transaction-intensive applications.

"In some applications there are things we can't do. For more complex requirements, we fall back into C mode ... and there are performance issues where we need instantaneous feedback and are not getting it," said Beth Meyer, vice president of graphical user interface development at The Chase Manhattan Bank NA's Brooklyn offices. "We're trying to deal with it using stored procedures or ... supplementing with other tools."

According to Judith Hurwitz, president of Hurwitz Consulting, Inc. in Watertown, Mass., both announcements "are important to PowerBuilder in terms of allowing the tool to begin to scale up to more effectively support transaction-intensive and team development."

Transarc's EncinaBuilder will link its Encina on-line transaction processing (OLTP) technology with PowerBuilder tools. EncinaBuilder was designed to simplify OLTP development while allowing PowerBuilder users to create more transaction-intensive applications, Powersoft officials said.

Another issue for developers has been lack of support for enterprisewide team development with PowerBuilder. Officials said they hope the Legent link will help.

Overflow

This year's Powersoft user conference had to close registration due to limited space — more than 2,400 customers and partners registered for this year's event in Orlando, compared with 830 attendees at last year's user conference.

Better tracking

An interface between PowerBuilder and Legent's Endevor workstation will let developers take advantage of Endevor's software configuration management system. Using this interface, groups of developers will be better able to track different versions of software created with PowerBuilder via Endevor's component storage and tracking facilities, officials said.

Also at the conference this week, Powersoft and Lotus Development Corp. will announce shipment of PowerBuilder Library for Lotus' Notes [CW, March 28], a product that integrates Notes and SQL data. It allows read/write access and offers the ability to transfer data across Notes and SQL repositories.

PowerBuilder Library for Notes is available in stand-alone form for $295 and with PowerBuilder Desktop at a promotional price of $499. EncinaBuilder will ship during the second half of the year and will be priced at $995.

The PowerBuilder/Endevor interface is available to PowerBuilder or Endevor users free of charge.

IBM to link CICS clients to mainframes, Unix systems

By Craig Stedman

IBM plans to start following through late this year on promises to open up client access to its CICS transaction monitor. The move would eliminate the need for a separate OS/2 server and allow PCs to directly link to CICS servers on mainframes, AS/400s and Unix systems.

Unix workstation clients would also be freed up for direct connections to mainframe and AS/400 CICS servers, said Steve Craggs, CICS business manager at IBM's Hursley Park Laboratories in the UK.

Open access support would first appear in a CICS/400 release due out in the fourth quarter, and client-level code will either be ready at the same time or will ship early next year, he added.

An executive at a large Midwestern insurance company said the ability to bypass a local OS/2 or Unix server would simplify application design and systems integration in CICS installations. "You wouldn't have to worry about the [local] server," the executive said, adding that the reduced complexity should "translate into hard-dollar savings."

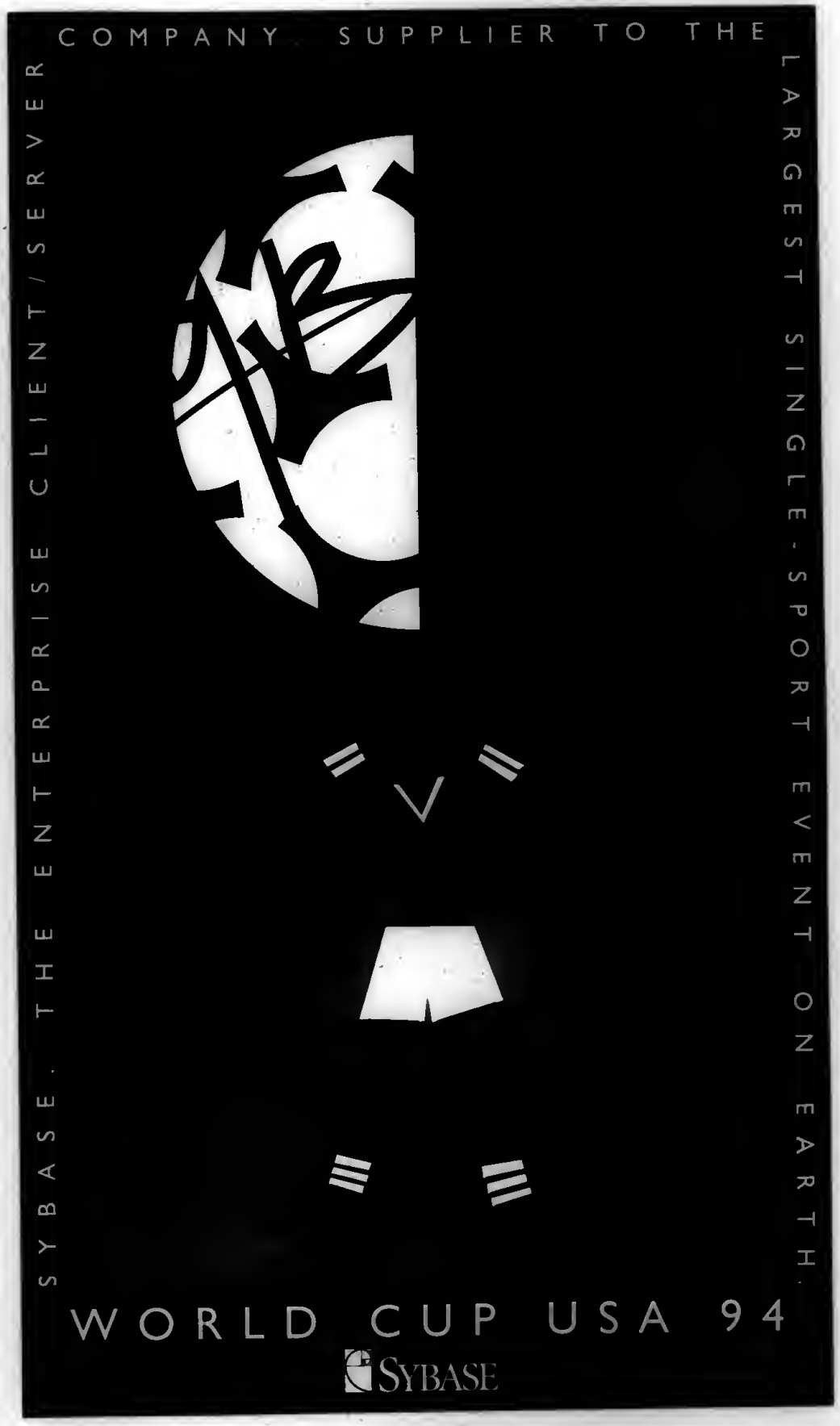
Paul Mason, an analyst at International Data Corp. in Framingham, Mass., agreed that the open access would "make life easier from an integration point of view." It is unclear how much demand there would be for connecting CICS clients to a mainframe because of the load that could put on the system, "but at least IBM is starting to put the pieces in place to make it possible," he said.

Forum policy

Meanwhile, IBM last week hosted the first meeting of a new CICS Implementors Forum that is taking control of the CICS application programming interface (API) [CW, May 16]. All members will have equal votes on changes to the API, but Craggs said IBM will still control the functional development of CICS.

Wes Melling, an analyst at Gartner Group, Inc. in Stamford, Conn., said the CICS API needs to be moved away from a mainframe orientation to support IBM's push to get the software implemented on a range of systems. "It wasn't originally conceived as a client/server API," he noted.

Besides IBM, the CICS forum includes Digital Equipment Corp. and Hewlett-Packard Co., as well as Merrill Lynch & Co. and Dresdener Bank from the user side. BT has also been invited to participate but wants the group to be "fairly small."



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Late, unstable wares plague IS

CONTINUED FROM PAGE 1

wrapped PC applications as client/server building blocks, those efforts are increasingly impeded by two recurring obstacles: delays in product delivery and unstable first versions.

Product MIAs

Whether these products have been demonstrated at conferences, referred to in user or developer briefings or even publicly announced, a number of key desktop applications continue to languish in development phase. Some prominent examples of products missing in action include the following:

- Microsoft Corp.'s Windows 4.0 and Enterprise Messaging Server.
- Borland International, Inc.'s dBase for Windows.
- Apple Computer, Inc. and Novell, Inc.'s OpenDoc specification.
- Unix versions of Lotus Development Corp.'s Notes groupware package.

While the jobs and reputations of IS managers depend on implementing projects on time, the unreliability of desktop shipping dates often leaves them holding the bag for vendors' shortcomings.

"Because of late products we've had to retrench, reschedule and build a number of work-arounds," said Frank Tuccio, director of special projects at Micro Health Systems in West Orange, N.J. "Am I happy with it? Of course not. I would like people to deliver things on time."

> "Am I happy with it? Of course not. I would like people to deliver things on time."
>
> *Frank Tuccio, director of special projects, Micro Health Systems*

Scheduling projects "defensively" is one way to cope with the situation, Tuccio said. IS managers must "plan for slippage on things that you don't do in-house. Build in a contingency plan or make room for enough fudge to handle late deliveries," he recommended.

Tuccio's remarks underscore a recurring theme among a sampling of IS managers contacted last week: IS cannot deliver on projects if vendors cannot deliver on software.

In an age where one of the top business priorities is time to market, six-month delays often have to be built into projects to avoid getting burned by a vendor. Even worse, when products finally ship, IS is reluctant to use them because of the reputed "1.0" instability problem.

"Always wait until Version 1.1 or 1.2," warned Leilani Allen, senior vice president of information technology at PNC Mortgage in Vernon Hills, Ill. "The software version that ends with .0 is always deadly."

Also disheartening is that follow-ups to buggy first versions — known as interim releases — are often budget busters. One IS manager at a Wall Street investment firm said that to upgrade 1,000 PCs to an interim software release would require hiring two additional people, at $600 a day each, for 15 business days. This alone adds $18,000 to a project's budget, he said.

"In some cases we've had to go to a different development strategy than the one we had anticipated using," said a senior systems analyst at an investment banking firm in New York. "In another case, we had planned on using [Microsoft's] Access database, where we needed certain SQL calls and Sybase connectivity." He said those features did not arrive, however, until Version 2.0 shipped a year later.

Mainframe shops are especially vulnerable to PC software delays. "There is naivete on the [information technology] side because they are not used to the PC software world," said Philippe Amouyal, vice president of Boston Consulting Group. "They go into client/server development with their mainframe mindset and then end up surprised that products don't include all their features or are still in their infancy."

The bottom line is that IS managers are growing less tolerant — not more — of shaky PC software. For example, one user said a delay in a Lotus spreadsheet product resulted in that company standardizing on Microsoft's Office.

"If those vendors want to be players in large enterprises, they have to start living up to their responsibilities," Allen said. "They better get their acts together because right now they are not in the same league with the rest of the industry."

Microsoft tardiness can derail developers

CONTINUED FROM PAGE 1

leases, then you probably deserve whatever happens to you," said Vadim Yasinovsky, president of Clear Software, Inc. in Brookline, Mass. "If you don't learn from history, then you are an idiot by definition."

Microsoft certainly has a patchy history of meeting its self-imposed deadlines. This is often exacerbated by the fact that even though the company tries not to give solid dates for products, it often tells customers and developers "privately" when it intends to ship them.

Promises broken

For example, although Microsoft called Windows 3.0 an "unannounced product" for nearly two years and refused to give any dates to the press, the product repeatedly slipped past the ship dates promised to independent software vendors and users. It finally shipped in May 1990.

These delays had a serious impact on some developers, who called themselves victims of the "dead-duck syndrome."

Taking the company at its word, some applications developers centered much of their financial futures on a timely delivery of the product. When that did not happen, some developers were forced to stretch out budgets set for six or 12 months to 12 or 18 months, or in some cases, even abandon a project.

> **What are the odds?**
>
> Gartner Group, Inc. gives Microsoft a 40% probability rating for delivering Windows 4.0 by the end of 1994; an 80% probability of delivering it in the first half of 1995.

"If Microsoft says they will ship Chicago in December but don't do it until May 1995, and I am writing nine applications or books, that means I have to spread my budgets for things like migration and training over a whole year instead of six months," said Joel Diamond, executive director of the Windows User Group Network. "It generally just mucks with people's lives."

One of the ill side effects of the dead-duck syndrome is that some of the smaller innovative developers are now reluctant to aggressively develop state-of-the-art applications for Windows 4.0, code-named Chicago.

"We have decided that it is no longer our role to lead the market and be first out with an application for" Chicago, said Bruce Shafer, president of PC-Qwik, Inc.

Universal slippage

For Windows NT, which was designed to appeal to IS organizations, Microsoft gave solid, official ship dates. But the product still slipped at least twice, first from the end of 1992 to the first half of 1993 and then to August 1993, when it finally shipped.

Microsoft appears to be following the same pattern with several other products, including its upcoming Chicago, Daytona and Cairo operating systems, as well as with Hermes, its systems management software, and Enterprise Messaging Server.

In defense of Microsoft and other developers, as systems become increasingly complex, it becomes much more difficult to keep them on schedule.

However, despite the need of customers and independent software vendors to know when systems will be available, Microsoft has often been accused by competitors and customers alike of using overly optimistic ship dates to freeze purchasing decisions and defeat competition.

Daytona doubt

Also in doubt now is whether Daytona — a smaller, faster version of Windows NT that is the NT 3.1 follow-on — will ship by the end of next month as promised. It is about to enter its second beta test, a Microsoft official said last week, which does not bode well for final shipment to end users in less than six weeks.

Cairo, a major update of NT that will add the Chicago user interface and an object file system, also has quietly slipped from delivery in the first to the second half of 1995 [CW, May 9].

Did we say 1994?

Over the years, Microsoft has learned well the art of obfuscation through evolving terminology.

For example, the next major release of desktop Windows, Chicago, also known as Windows 4.0, was supposed to go into beta testing in February or March, Microsoft Executive Vice President Mike Maples said last fall. Final shipment would be by year's end, he said.

By the end of March, however, the terminology used to describe the beta release changed. It would now ship in late March in a form described as "pre-beta" or "limited beta."

But wait. Microsoft was not done yet. The company told developers in December that the full-scale beta testing would begin this month.

Most recently, however, Microsoft spokespeople are hedging even that, saying they meant sometime this spring — which does not officially end until June 21 — giving the company an additional three weeks. They are also going back on statements made in February that all of the completely object-oriented, new user interface would be in the first round of beta releases.

Some users, independent software vendors and analysts predicted in early January the company would not ship Chicago this year, an oracle that is beginning to look more and more like reality [CW, Jan. 10].

"We still feel we can make our 1994 goal," said Brad Chase, general manager of the personal operating system division. However, Chase confirmed that some PC OEMs are likely to hold out shipping Chicago this year if it is not finished by Oct. 31 because of the time required to get new systems into the channel.

— Stuart J. Johnston and Ed Scannell

PC vendors overdose on 'vision thing'

By Computerworld staff

This week's Comdex Spring '94 is the kind of show that some say Hillary Clinton could learn to love: so many vendors selling lots of futures, but very little talk of what users can put their hands on now.

Chief among the future sellers will be **Microsoft Corp.** The company will show off a version of Windows 4.0, code-named Chicago, that will reportedly give users the first extended look at the progress the company has made toward constructing its new graphical user interface (GUI).

The product is not expected to enter its first full-blown beta test until sometime in June, however, and that puts the company's goal of delivering the final product this year in jeopardy. In the next several months, Chicago's GUI looks to be a work in progress (see story page 1).

Microsoft will also show off the latest version of Daytona, the smaller, faster version of Windows NT about to go into its second round of beta testing. The version, still expected to ship by July, also features improved network connectivity.

Gates speaks

Microsoft Chairman Bill Gates will give one of the three keynotes at the show. In a speech titled "Future Opportunities in PC Computing," Gates will discuss the forces behind the changes in the information technology industry.

The other keynote speakers will be Christopher Galvin, president and chief executive officer of Motorola, Inc., who will discuss "The Home of the Future," and Adrian Rietveld, president of WordPerfect Corp., who will discuss his company's commitment to computer-enhanced communications.

Large-scale rollout

IBM, Microsoft's archrival in the operating systems business, will also discuss futures. The company is expected to announce the formal beta program for its follow-on to OS/2 for Windows, a product not expected until late summer.

The beta test is expected to be the largest IBM has ever had for an operating system, according to developers interviewed last week. They said IBM will begin distribution to what will eventually be tens of thousands of users — including availability via bulletin boards.

This version of OS/2, tentatively called Personal OS/2, was designed to run comfortably in just 4M bytes of memory. With most hardware manufacturers shipping desktop systems with 4M bytes, company officials said this version has the best chance of landing the company some badly needed bundling deals among top-tier vendors.

The 14th annual show will house 1,100 vendors and is expected to attract close to 100,000 people, according to show organizers.

Other events will include the following:

- **Digital Equipment Corp.** will demonstrate a system this week that enables users to access their electronic-mail messages via telephone. The company is also offering software that gives Microsoft's Windows NT end users and system managers access to Digital's network printers and printer software features. The $98 package will be bundled with NT.

SHOW PREVIEW

- **WordPerfect** will announce and rename Version 4.1 of Office, the company's E-mail and groupware package [CW, Feb. 28]. Key features of the updated package include the ability to run server repairs without taking down the server and the ability to run Office as a NetWare Loadable Module and as an OS/2 message server.
- **Epson America, Inc.** will show its ActionNote 700 series of notebooks for the first time. Due to ship next month, the ActionNote series will be based on an Intel Corp. 33-MHz 1486DX and include monochrome and active- and passive-matrix color screens.

Pricing ranges from $2,149 to $3,549, with a 120M-byte hard drive.

CW Guide to Windows Application Integration. See page 121.

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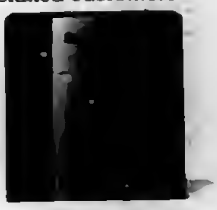

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ASK welcomes CA takeover

Purchase eases vendor's fiscal woes, but some questions linger

By Kim S. Nash

After several months of watching The ASK Group, Inc. writhe under money pressures, shrinking market share and the stress of high-level executive departures, Computer Associates International, Inc.'s $305 million bid to buy the foundering database vendor came as a relief, users and analysts said last week.

ASK has reported more than $20 million in losses so far this year on sales of $184,000 and has cut its work force to 2,000, down 20%.

Sandra Kurtzig, ASK's founder, said the CA takeover "made sense" to her and other board members who approved the deal early this month. "Clearly, the company has lost momentum," she said. "Action had to be taken."

As a result of CA's proposed buyout, users of ASK's Ingres database and manufacturing software said they will no longer have to worry about the vendor's fiscal strength.

ASK founder Sandra Kurtzig: *'I'm past the emotionalism of it'*

New questions

But creating a new set of fears, observers said, is the fact that CA has little experience in ASK's bread-and-butter relational database and nonmainframe manufacturing systems businesses.

Also, the abrupt resignation on May 13 of ASK's chief technology officer Marylin Bohl — just days before the CA deal went public — is likely to slow the melding of the two companies' product development agendas, said a senior scientist at a major industrial manufacturer in Pittsburgh.

Herb Edelstein, a principal at Euclid Associates, a database consulting firm in Potomac, Md., agreed. "Financially, [the acquisition] is good for ASK and CA. But integrating these product lines from the technical point of view is not at all possible," Edelstein said.

But Ingres database users are not necessarily looking for integration with CA's mainframe-based CA-IDMS or Datacom databases, as long as Ingres continues to receive enhancements. If CA begins to lay off Ingres workers, the company would have a tough time providing those upgrades, Edelstein added.

Charles Wang, CA's chief executive officer, said no decisions have been made about possible layoffs affecting ASK.

Filling the gap

On the manufacturing side, ASK's minicomputer- and Unix-based Manman applications fill a hole in CA's manufacturing offerings. There again, users who welcome CA's marketing and financial muscle are hoping the software conglomerate does not fiddle with proven technology, said Michael Campbell, past-president of the ASK User Group. Another attraction for CA was the object technology Ingres has developed, some observers said.

Rumors that CA wanted to buy ASK started circulating early this year. However, the fact that Electronic Data Systems Corp. owned 18% of ASK and sat on ASK's board probably blocked a deal because of EDS's lawsuit against CA alleging unfair licensing practices [CW, March 21].

With that suit now settled (see story page 1), EDS has agreed to tender its shares of ASK, as has Hewlett-Packard Co., which owned a 9% stake.

Thomas Hoffman contributed to this report.

Sprint Corp. and EDS plan merger

By Ellis Booker and Mark Halper

Electronic Data Systems Corp.'s never-ending quest to strike up a partnership with a major telecommunications player led last week to a proposed merger with Sprint Corp.

While the deal could take as long as a year to finalize, a key benefit for outsourcer EDS is access to Sprint's public telecommunications network. Such wherewithal is increasingly important for outsourcing deals in the global economy, where vendors such as EDS must provide both data and voice services to customers' far-flung operations.

In creating an integrated company with more than $20 billion in revenue and some 120,000 employees, EDS and Sprint face several logistical hurdles. Before the merger takes place, EDS parent General Motors Corp. said it must first spin out the wholly owned EDS, a tricky process requiring several government approvals.

Yet the same synergies that led EDS to try twice before to merge with a telecommunications company remain. Foremost is the opportunity to tightly package EDS' data outsourcing and systems integration work with network outsourcing services. A secondary benefit is the chance to apply its transaction systems know-how to future information highway services offered by Sprint.

A combined EDS/Sprint would offer users a "one-stop provider for all communications and information needs," EDS Chairman Les Alberthal said.

Analysts said the alliance would finally give Sprint a handle on the data market. "Sprint's long-distance top management has taken a long time to really understand the data processing needs of their corporate customers — and still isn't 100% there," said Michael Elling, senior vice president and telecommunications analyst at Oppenheimer & Co., Inc. in New York.

Outsourcing costs. See page 85.

Settlement

CONTINUED FROM PAGE 1

er contracts," said Charles E. Phillips, a financial analyst at Kidder, Peabody & Co. in New York. "Customers wanted this [lawsuit] removed and pressured EDS to have it resolved."

Users offered mixed views on how and whether their purchasing decisions were affected during the two-year plus legal standoff.

"Nothing that EDS has or hasn't done would influence my decision to do business with CA. It's the pricing and licensing issues that are important," said Rich Malone, a principal responsible for data processing at Edward D. Jones & Co., a Maryland Heights, Mo., brokerage and a CA user.

Genuine concerns

Others viewed the legal tussle differently. Although Citibank NA had not considered purchasing EDS services during the course of the lawsuits, "executives at any company looking to enter into a business relationship with an organization with a major legal battle on its hands would have to be concerned," said Salvatore Giordano III, a vice president at Citibank in Long Island City, N.Y.

Curiously, CA and EDS executives claimed the trilogy of events that unfolded last week — the legal settlement, EDS' proposed merger with Sprint and CA's bid to acquire ASK — were purely coincidental.

EDS' approval on the CA/ASK acquisition was "a positive outcome of our discussions, but not a part of the settlement," said CA Chairman and Chief Executive Officer Charles B. Wang.

But the flurry of wheelings and dealings left many analysts convinced that a coordinated plan was at work.

"Both companies claimed there was no connection between the timing and the EDS spin-off, but I find that a little hard to believe," said Andrew Brosseau, a director at Cowen & Co., a Boston-based investment banker.

The agreement between CA and EDS includes a 12-year, fixed-rate enterprise licensing agreement, which provides EDS with unrestricted use of dozens of CA software packages at its worldwide data centers to process transactions for hundreds of clients.

CA and EDS executives said their software licensing agreement represents the industry's largest such pact to date, although they declined to provide specifics. Analysts have placed the pact, which includes a five-year renewal option, at $50 million to $100 million per year — or possibly more than $1 billion over its lifespan.

CA user Rich Malone: *Pricing and licensing, not EDS moves, will influence his decision to do business with CA*

$305M price tag

Under the definitive agreement to acquire ASK, which the firm's board of directors has already approved, CA will pay the equivalent of 72% of ASK's annual revenue, or $305 million. Analysts said they expect CA will make ASK profitable by year's end, which would result in another $400 million in revenue to CA's already-swelling coffers.

In the database arena, the cease-fire provided CA with EDS' blessing to pursue the acquisition of ASK, a Santa Clara, Calif.-based database software developer (see story above).

Based on the anticipated revenue stream from ASK, plus the manufacturing and Unix-based relational database markets that the company opens up to CA, analysts called the acquisition a steal.

Quite a bargain

"If they can salvage a good part of [ASK's] business, it's a fire sale," said Ed Acly, director of software research at Technology Investment Strategies Corp. in Framingham, Mass.

Acly and other analysts said ASK was a bargain at $305 million because that figure is only 72% of revenue. Rivals such as Oracle Corp. and Sybase, Inc. are valued at three or four times their revenue.

The ASK acquisition is a textbook example of deals CA has made in the past of software vendors endowed with strong product mixes and solid customer bases but often poorly managed and struggling financially, analysts said.

Once the ASK acquisition goes through by early July, pending approval by the Securities and Exchange Commission, CA will have become an EDS client. EDS currently manages the bulk of ASK's information systems operations.

Kim S. Nash, Mark Halper and Ellis Booker contributed to this report.

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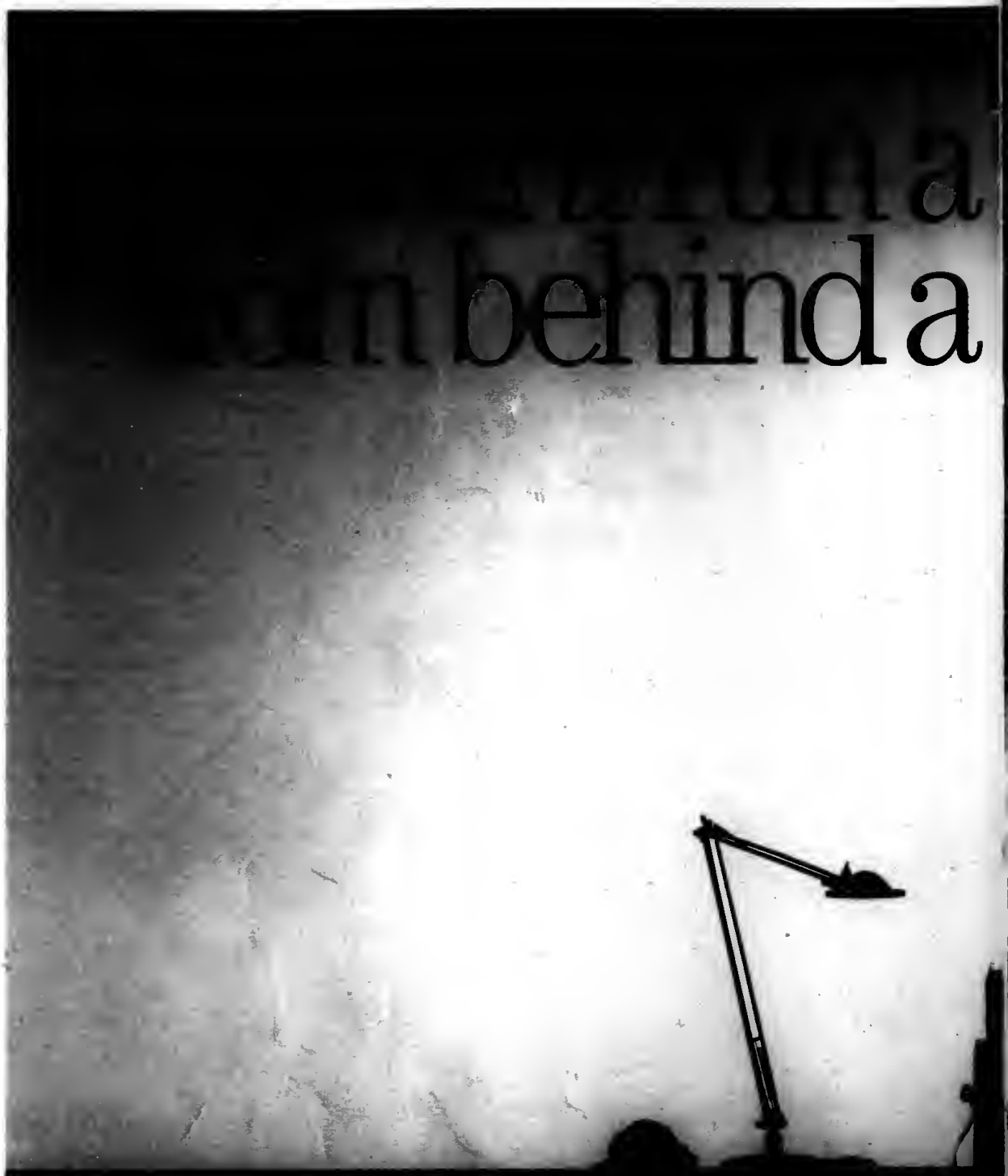
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Amdahl introduces database servers

By Craig Stedman

Amdahl Corp. today will formally introduce a promised line of massively parallel database servers for general shipment in the fourth quarter. The company said it plans to add follow-on models based on a faster processor from NCube by the second half of next year.

Daniel Culhane, group vice president for systems research at Gartner Group, Inc., a consultancy in Stamford, Conn., said the relatively slow performance of NCube's existing 5-MIPS processors is a temporary chink in the armor of Amdahl's Xplorer 2000 series servers.

"The current engines are a little small. People could wait a little bit and get a more powerful machine," Colhane said. He added, however, that Amdahl on the whole has come up with "a pretty interesting entry" for off-loading decision-support queries from mainframes running IBM's DB2 database.

Michael Taylor, an Amdahl vice president in charge of the Xplorer 2000 program, said the first models should provide "perfectly adequate performance for parallel applications." But he acknowledged that NCube has emphasized low cost over performance thus far and said the follow-on models with the faster chip will have much better throughput.

Amdahl is not releasing list prices on the Xplorer 2000 systems. Taylor said the machines will sell for about half of what IBM charges for its new System/390 Parallel Query Server (PQS), but analysts said comparisons are almost impossible because IBM has not disclosed pricing. Culhane said he expects Amdahl's prices to be under $20,000 per MIPS, excluding disk storage.

The new NCube-3 processor is expected to be available later this year, but Taylor said it would likely take Amdahl into the second half of next year to build and test systems with that device.

Amdahl is combining the NCube massively parallel hardware with Oracle Corp.'s parallel Oracle 7 database, a SPARC front-end processor and data access software from Information Builders, Inc.

Xplorer explainer

Amdahl's Xplorer 2000 series of parallel database servers will include two models, one for an office and one for a computer room

	Model 50	Model 100
	32 to 64	64 to 512
	1G byte to 2G bytes	2G bytes to 16G bytes
	10G bytes to 80G bytes	48G bytes to 1.3T bytes

The Xplorer 2000 will compete with IBM's PQS, which runs MVS and DB2, and with the Unix-based Teradata DBC/1012 system sold by AT&T Global Information Solutions, the market leader for decision-support hardware. Taylor said Amdahl hopes to sell 50 to 100 machines by the end of next year — accounting for about 10% of its overall revenue.

George Sekeley, president of CSX Technology, Inc., the information systems subsidiary of CSX Corp. in Jacksonville, Fla., said the Xplorer 2000 "is one of many" platforms that he will evaluate as he implements an informational database for decision-support purposes.

Oracle would provide a more efficient database server than DB2, but Unix lacks polish compared with MVS, Sekeley said. These factors would have to be weighed against each other, he added.

Like the PQS, the first Xplorer 2000 models will be read-only database engines. New technology from Information Builders supporting DB2-to-Oracle updates should be added late this year or early next year, along with other functional enhancements, Taylor said.

Amdahl hopes the updating capabilities will broaden the appeal of the line as general-purpose servers, but Rich Evans, an analyst at Meta Group, Inc. in Westport, Conn., said Oracle 7 is not ready for prime-time transaction processing. "It can do selected updates, but you won't turn it into an on-line system for a while," Evans said.

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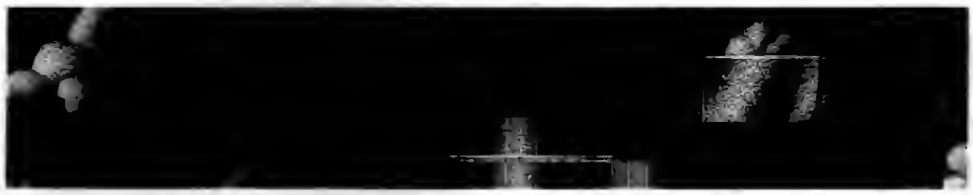

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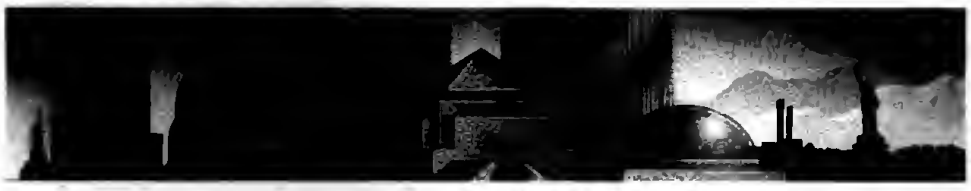

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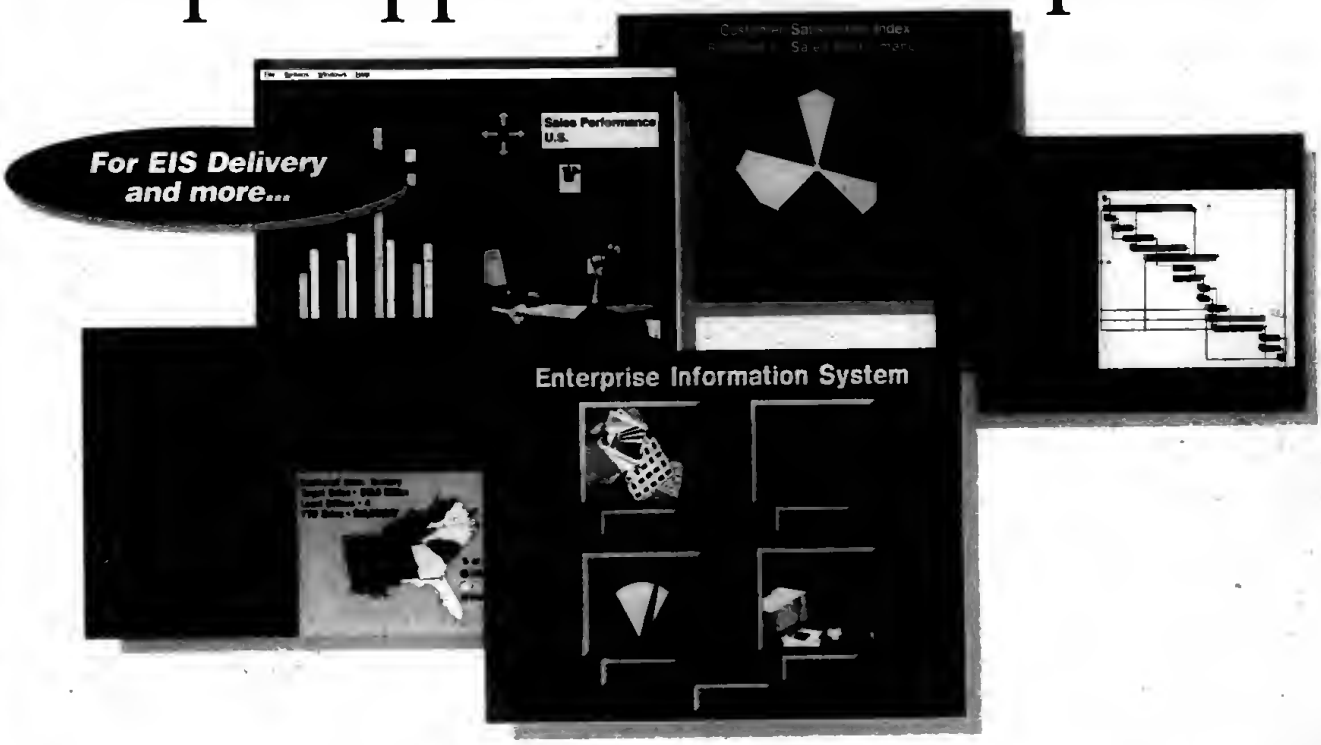

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	DIGITAL 2100 Server A8400MP (1 CPU)	HP 9000 H60	SUN SPARCserver 1000 (2 CPU)	IBM RS/6000 590H
PROCESSORS	1-4	1-2	1-8	1
SPECint92	124.0 per CPU	108.8 per CPU	60.3	97.6
I/O (MB/sec.)	132	32	32	80
INTERNAL RAID	Yes	No	No	No
ENTRY PRICE (US $)	$26,900	$76,000	$46,700	$66,400

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DEC boosts PC product lineup

By Mary Brandel

Digital Equipment Corp. punched up its PC product lineup last week with 13 models that analysts said will keep the company on par with the competition.

"Digital is going through the same sort of tweaks to its product lines with the new Intel SX2, DX4 and Pentium 90 that everyone else is going through," said Ted Julian, an analyst at International Data Corp. (IDC) in Framingham, Mass.

Digital has been criticized for its PC pricing, but with last week's announcement, "it looks a little more aggressive to me," said Chuck Venter, an analyst at Meta Group, Inc. in Westport, Conn. Two weeks ago, Digital reduced prices by up to 7% on its Value Line.

The company's unveiling filled several gaps in its PC lines. Digital added Value Line models (the LPV and LPX families) based on Intel Corp.'s SX2 50-MHz processor, and its entire product line is now available with the DX4 100-MHz chip. Digital also added Premium XL PCs and servers based on Intel's fastest Pentium chip, which runs at 90 MHz.

IBM and AT&T Corp. (see story below) also made additions to their PC families last week. Others have announced 90-MHz Pentium machines, but shortages are delaying shipments.

Digital's Pentium 90-based server, the DECpc XL Server 590 with 16M bytes of RAM, is priced at $5,599. Its Pentium 90-based DECpc XL 590 with 8M bytes of RAM costs $3,399.

Digital's new DX4-based slim line LPV+ 4100 with 8M bytes of RAM is priced at $2,199. A full-size LPX+ 4100 with 8M bytes of RAM costs $2,329.

Environmentally correct

Additionally, Digital upgraded its full-size LPX PCs to be Energy Star-compliant. Previously, only its LPV models were dubbed "green" PCs. The new green models — with new power management features, enhanced communication and serial ports and 64-bit graphics — come with no price increase.

Digital has also made 64-bit graphics standard on its XL PCs and optional on the Value Line.

"Looking at the announcement, it's like 'big whoop,'" Julian said. "But the reality is, Digital is kicking butt in the PC market."

In the first quarter this year, Digital sold 72,000 units in the U.S., compared with 40,000 a year ago, according to IDC. Worldwide, it sold 230,000 in the quarter, compared with 95,000 a year ago.

The DECpc MTE 4100, XL 4100 and LPX+ models are available immediately; all other systems are scheduled to be available the first week in June.

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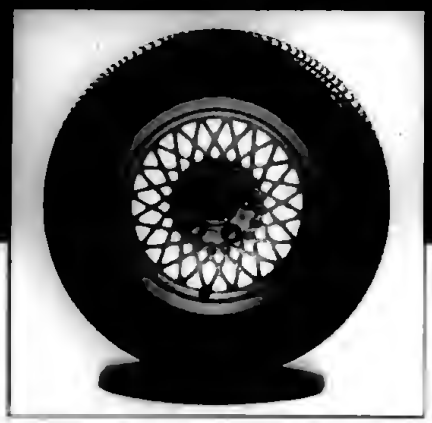

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AT&T seeks bigger share in PC market

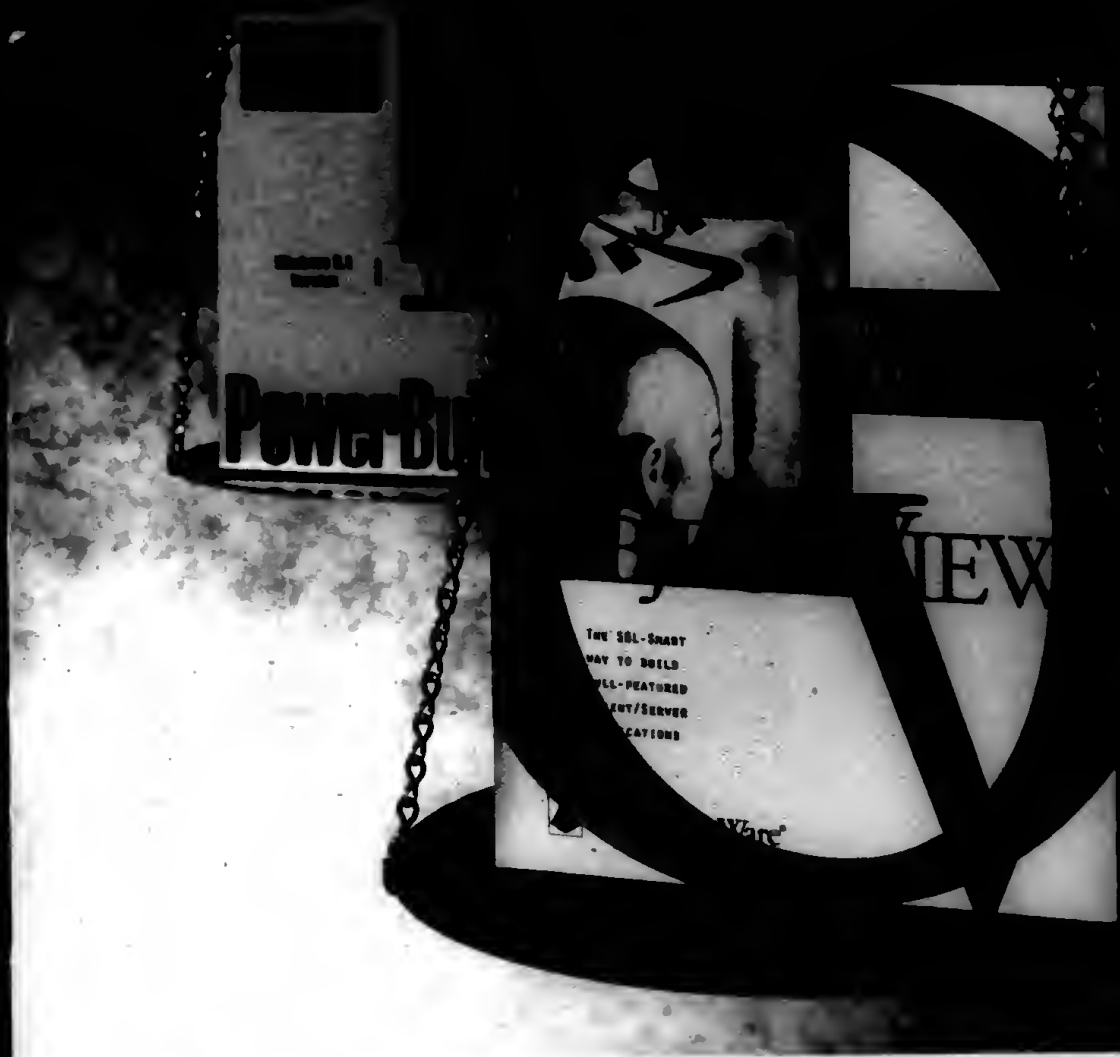
AT&T Global Information Solutions hopes to grab a bigger share of the PC market with a new line of very aggressively priced products. The company last week launched the Globalyst line of desktop PCs, which are built around Intel Corp.'s i486 and Pentium chips and priced at just over $1,000 at the low end.

The Globalyst series starts at $1,040 for a 486SX 33-MHz system with 4M bytes of RAM and a 170M-byte hard drive. A top-of-the-line system equipped with a 66-MHz Pentium processor with 8M bytes of RAM and a 340M-byte hard drive will cost $3,075.

AT&T's price points, which follow IBM's unveiling last week of a new range of ValuePoint desktop systems, have once again lowered the bar on desktop prices. IBM, in what it called a response to "recent price cuts in the industry," last week drastically lowered prices on its Pentium-based ValuePoint systems by as much as 25%.

An IBM ValuePoint SI Series Model 638i-F50, based on a 486SX 33-MHz chip with 4M bytes of RAM and a 170M-byte hard drive, now costs $1,200. An AT&T Globalyst 510 model with a similar configuration costs $1,040.

—Jaikumar Vijayan



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New wireless option hits FCC snag

Companies fear delay may give cellular services a leg up on enhanced wireless features

By Michael Fitzgerald

Like the scatterbrained white rabbit in *Alice in Wonderland*, the Federal Communications Commission may be late for a very important date in the future of wireless communications.

The FCC was expected to begin issuing licenses for personal communications services (PCS) by May 7, but it appears to have missed its deadline.

The only way the FCC could have made the deadline was to issue pioneer preference licenses, which are awarded to companies that have made significant technical advances. However, FCC officials declined to say by press time if any preference licenses have been issued.

Feeding frenzy

PCS is a broad piece of wireless spectrum that will carry voice, data and other types of information. Because PCS represents a significantly less expensive way to transmit wireless data and voice than cellular technology does — and also opens the market up to a wide variety of competitors locked out of the cellular market — the industry at large wants a crack at it.

"We have a feeding frenzy here — nobody wants to be left out," said Andrew M. Seybold, editor of "Outlook on Mobile Computing," a newsletter in Brookdale, Calif.

Ralph Haller, chairman of the FCC's PCS task force, promised that the FCC will hold auctions around the middle of the year for narrowband PCS licenses, which will be good for applications such as paging and for interactive video-capable bands. Wideband auctions will be held later in the year.

Significant obstacles are already cropping up around PCS, such as the need to move existing users into other areas of the spectrum and the cost of building the infrastructure. These obstacles have commercial vendors wringing their hands over what they perceive as delays in the PCS licensing process — delays that could cost them the advantage they expect to have over cellular services.

Mary E. Madigan, PCS issues manager at the Personal Communications Industry Association, noted that "the service provider industry is in a panic."

Yet some potential bidders are maintaining their calm. "My take is there's no reason to be rushing into these auctions," said Robert Dilworth, president of Metricom, Inc., a small Sonnyvale, Calif., vendor of wireless networks. Dilworth said his company expects to bid on PCS spectrum.

On the blocks

Haller noted that commercial interests contributed heavily to the 67 petitions the FCC received for its initial rules on PCS. All the petitions must be considered before the FCC can begin the four- to six-month process of picking an auctioneer for the wideband auctions.

The auction process itself is slowing things down. The FCC has not held auctions before, instead allotting cellular spectrum through a lottery. This practice led to lottery winners who had no intention of building cellular networks who then sold their licenses for dazzling fees to companies such as McCaw Cellular Communications, Inc. The profit some of these licensers made prompted the federal government to hold auctions for PCS.

Those auctions are expected to bring as much as $7 billion to the federal treasury.

Madigan says the Personal Communications Industry Association, an industry lobbying group in Washington, is concerned about the number of regulatory and technical questions about PCS that remain unanswered.

Among other things, the FCC has created a significant number of licensing divisions that will make it difficult to create a nationwide PCS network. It has also required that small businesses and women- and minority-owned firms control a certain amount of licenses. Such conditions do not exist in the cellular realm.

"The FCC has strangled PCS — this was a great opportunity for the U.S. to really bust open the market for mobile communications," said Ira Brodsky, president of Datacomm Research Co. in Wilmette, Ill. Brodsky said that "this thing is so weighed down and divided up" that he would be surprised to see companies make significant investments at the PCS spectrum auctions.

FCC officials bridle at these kind of accusations. "We're not talking a couple of years' delay here," Haller said.

Legitimate fears

Analysts said some PCS fears are legitimate.

"Technically, you can do everything with cellular you can do with PCS — dual-function handsets, microcells and everything," Seybold said. "If PCS is delayed, it gives the cellular vendors time to add [these functions], so that when PCS comes on-line it is possible that nobody will want it or need it."

Meanwhile, users such as Lee Nolan said they are willing to wait.

"We're going to see a lot more marketing than we see product for a while," said Nolan, a senior telecommunications engineer at the Travelers Insurance Co. in Hartford, Conn.

Nolan said the wireless movement is in too much of a state of limbo to even predict that digital communications media such as PCS will be better than analog modes such as code division multiple access. "They're talking about a superhighway, and we're dealing with dirt paths," he said.

Cadre's ObjectTeam eases object-oriented development

By Melinda-Carol Ballou

As "object-oriented" takes its place as one of the key hype words for the 1990s, design and analysis methods and tools supporting them are emerging to make life easier for development sites transitioning to the new programming paradigm.

Cadre Technologies, Inc. this week is expected to announce a new version of ObjectTeam, the company's object-oriented analysis and design tool for C++, C and Ada.

Among other features, the new version more fully supports the Schlaer-Mellor and Rumbaugh et al object-oriented design methodologies. These methodologies, and others such as Coad-Yourdon and Booch, are important because they give developers a compass or a structure for dealing with uncharted territory, according to corporate developers and analysts.

Rigorous rules

A development group at GTE Government Systems Corp., a data communications company in Needham, Mass., opted for Cadre's Schlaer-Mellor product because of the rigor of its rules and the strong guidance it provides developers.

"When I joined the team in early '94, they were a group of object-oriented novices. Although the team had almost 200 years worth of software development experience, we only had a few years of C++ development experience," said Peter Fontana, an object-oriented software development consultant at GTE. "The biggest benefit of the Schlaer-Mellor method was having a standard approach. Everyone takes the training, has the same rules, and the methods are tightly defined."

According to Fontana and other developers, the Rumbaugh techniques are appropriate for smaller projects with less overhead or for those that do not require the same degree of structure as major information systems initiatives.

Steve McClure, an analyst at International Data Corp. in Framingham, Mass., said methods such as Schlaer-Mellor allow developers to take better advantage of the benefits of object-oriented development. These include code reuse or better integration of business processes into application development.

"If you're going to be coding objects, it's worth the time to go through the methodology to identify what the objects are in a specific domain and the relationships between them, their behavior and their attributes," McClure noted. "Then the coding part becomes much easier."

Increased benefits

The use of object-oriented design methodologies for design and analysis can significantly increase the benefits to be gained from object-oriented programming, according to corporate developers and analysts.

He said adoption of design and analysis methods — and tools supporting them — lag behind in the craze for generic object-oriented programming that is sweeping the corporate developer world.

"Most people would say that it's probably a good idea to do analysis and design before starting the programming, but it isn't necessarily translated into using those tools yet," McClure pointed out.

Enhanced capabilities

The new version of Cadre's ObjectTeam tools allow developers to generate code from Schlaer-Mellor object-oriented analysis models. This release also offers an improved object repository, integration enhancements and extended code generation capabilities.

Separately, Cadre introduced Version 6.0 of the TeamWork computer-aided software engineering tools. New features with this version include rapid prototyping capabilities, dynamic model verification and debugging.

ObjectTeam pricing starts at $3,995, and Teamwork prices start at $8,500. The new versions for both products are shipping now.

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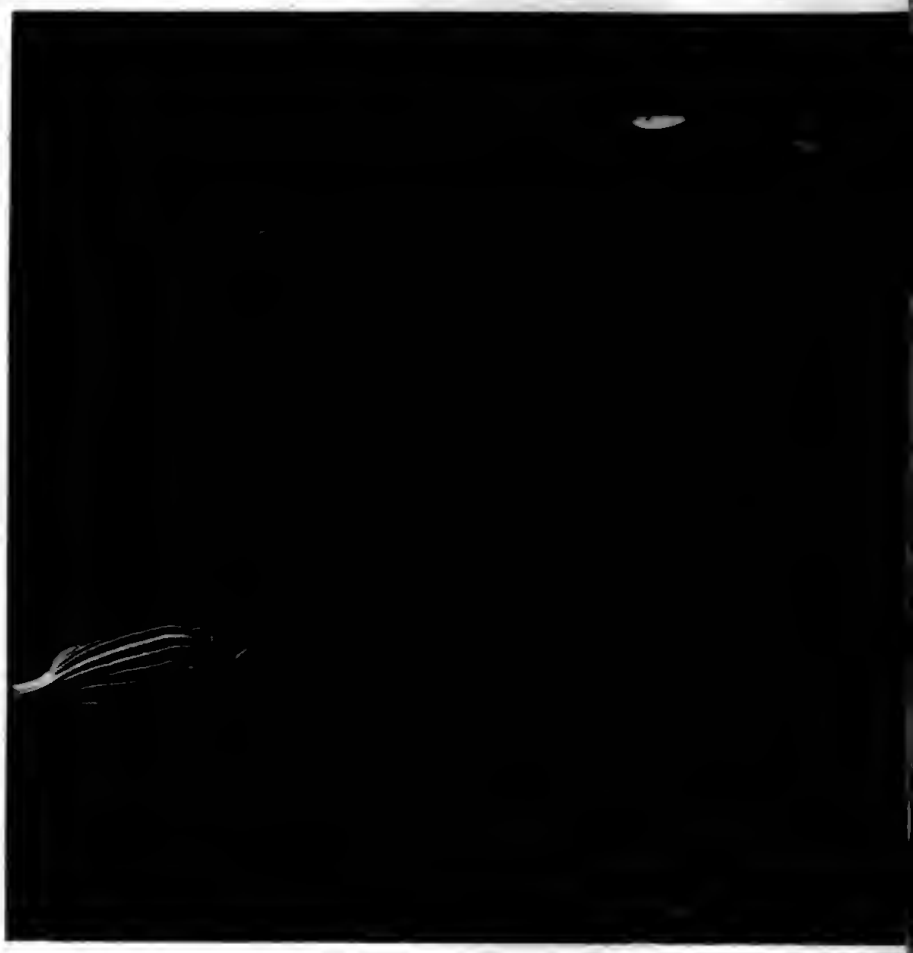

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Analysts cast cold eye on networking

By Stephen P. Klett Jr.

■ Few companies that nearly double their net income in a quarter disappoint Wall Street. Last week, however, Cisco Systems, Inc. did just that.

The San Jose, Calif., networking company posted a profit of $84.3 million for the third quarter, an 82% gain over the same period last year. However, the 32 cent-per-share earnings only just met financial analysts' expectations, sparking Cisco's stock to fall 5¾ points to 23¼ as more than 44 million shares traded hands.

The news caused a domino effect, with several other networking companies' stock taking hits (see chart).

Yellow light

Several vendors' stocks took hits in the wake of Cisco's earnings announcement on May 13

Company	Close	Net change
Cisco	23 1/4	-5 3/4
Wellfleet	63 1/2	-8
3Com	55	-2 5/8
Cabletron	93 1/2	-2 1/2
CrossCom	10 11/16	-5/16

Source: Wall Street Journal

"The market is going through a maturation phase that says big players like Cisco aren't going to be growing 90%, quarter over quarter [anymore]," said Valentin Sribar, an analyst at Meta Group, Inc. in Reston, Va.

Cisco's slowed growth — 9.6% for the quarter compared with 20% sequential jumps of 15% to 20% during the past 16 quarters — and the subsequent frantic trading it triggered, were interpreted by some observers as signs that growth in the networking industry as a whole is beginning to slow down.

Wall Street analysts attributed the slowdown to several factors, such as market concern over interest rates, user uncertainty over migration strategies and vendors' shift in sales focus from large corporate accounts to smaller, branch and remote office sites.

Pinpointing the problem

Cisco pointed to a reduction in its backlogs as a contributing factor to its particular slowdown. For example, lead times for product delivery that were as much as 10 weeks nine months ago are now at less than four, a Cisco spokesman said. While this is good for customers, the spokesman said it made it harder for Cisco to predict long-term growth.

"Cisco has cautioned us to anticipate erosion in gross margins as there is a shift to lower-performance, lower-cost routers," said Andy Shopick, an analyst at Nutmeg Securities in New York. He added, however, that this did not explain what happened to Cisco's stock, which he characterized as being more of a knee-jerk reaction to Cisco being just at or within expectations since it went public four years ago. Shopick said the drop in Cisco's stock should not be seen as the effect of a major industry shift in focus, but he added it could be a harbinger of things to come.

Other industry analysts agreed, while also noting that large corporate sites still hold enormous potential.

"Small offices are not mom-and-pop operations — they are the branches of the large corporate sites that companies like Cisco have been selling to for years," said Paul Callahan, an analyst at Forrester Research, Inc. in Cambridge, Mass. "While margins are definitely going to be different than with campus routers, the market still represents a huge opportunity."

Platinum's woes continue

By Rosemary Cafasso

Platinum Software Corp. last week announced a series of dramatic moves to get the financially troubled firm back on solid ground, including plans to cut close to 40% of its work force and scale back to its core financial software offerings.

As expected, Platinum also filled in blanks on the financial side last week. Revenue for its most recent quarter, ended March 31, was $14.2 million — several million dollars below analysts' expectations. The firm reported a net loss of $13 million. The Irvine, Calif., company also plans to take a onetime restructuring charge of $15 million in the next quarter.

Platinum, a longtime player in the LAN-based financial software market, has been an up-and-comer in the client/server applications field. With an estimated $11 million in client/server software revenue, Platinum was recently ranked the sixth biggest moneymaker in the client/server accounting software market by International Data Corp. (IDC) in Framingham, Mass. But the company has had a tough year.

"They were clearly growing too fast and going in too many directions," said Claire Gillan, an analyst at IDC. "I think they need to focus on damage control."

Platinum had predicted revenue would be in the $14 million ballpark. Yet the company also said it would need to restate revenue totaling $18 million, spanning eight quarters dating back to 1992.

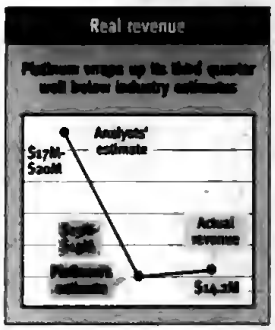
Last month, Platinum said it would restate revenue in the $6 million to $10 million range. A spokesman said that upon reviewing bookings more closely, Platinum determined the restatement would be about twice as much.

The restatement put several of these quarters in the losing column or substantially shaved off revenue originally recorded. For example, Platinum originally reported $38.6 million in revenue for fiscal 1993, a 143% increase from the previous fiscal year, and a loss of $16 million. Restated, Platinum's revenue for fiscal 1993 is $28 million with a loss of $17 million.

Carmelo Santoro, Platinum's new chief executive officer, said much of the $18 million that is being restated came about because "we booked the sales at the wrong time." He explained that in certain cases Platinum took an aggressive approach by recording the full value for some contracts before receiving payment in full.

Back in the biz

Gerald Blackie, a former founder and head of Platinum, had a short-lived hiatus from the software industry. After resigning from Platinum last month, he resurfaced last week as the chief executive officer of PowerPay Software, a Rockville, Md., company that sells human resources and payroll software for client/server platforms.



Company cuts back

Santoro said the company will downsize the business to its series of financial software for LAN-based environments and Sequel to Platinum, the newest client/server version of its applications. It will retain a few related applications, such as treasury management and distribution modules.

Other products, including cost management, a sales force automation package and manufacturing software, are on the block. Santoro said the goal is to spin off these product lines to certain Platinum managers who will then launch separate companies.

Santoro also said that up to 200 managers related to the spin-off plans are part of the 37% work force reduction plan. The other 100 employees were laid-off last week.

Microsoft loses Round 2 to Stac

By Ed Scannell

David beat Goliath, at least for one week, as a U.S. District Court in Los Angeles ruled that Microsoft Corp. must withdraw tens of thousands of copies of DOS from the market to comply with an injunction filed by Stac Electronics.

In a preliminary ruling, Judge Edward Rafeedie said Microsoft must withdraw or destroy all copies of DOS that contain the DoubleSpace compression utility. This utility has not been sold through resellers since Feb. 23, when a federal jury ordered Microsoft to pay $120 million to Stac for having infringed on two patents used in Stacker, the company's data compression utility.

Rafeedie is expected to make a final ruling on the injunction this week.

"We're happy with the judge's tentative ruling," said Stac Chief Executive Officer Gary Clow. He added, however, that he fully expects the appeal process to drag the case out for another year.

No second to that motion

In a second ruling, the judge said he would not grant Microsoft its request to halt distribution of Stac's recently released Stacker 4.0 compression program. Microsoft had filed a motion in February to halt the Stac product, claiming it also infringed on patented Microsoft technology.

For more than a month, Microsoft has been shipping the 6.21 version of DOS, which does not contain any data compression technology. The company said it will bundle another data compression utility with DOS 6.21 beginning sometime in June.

Microsoft officials maintain they did not infringe on Stac's patents — and that the $120-million award given to Stac is too high.

"We still feel like the jury made a mistake," said Steve Ballmer, Microsoft's executive vice president of sales and support. "That's why we will continue to push that point of view through the judicial system. If we lose, we lose."

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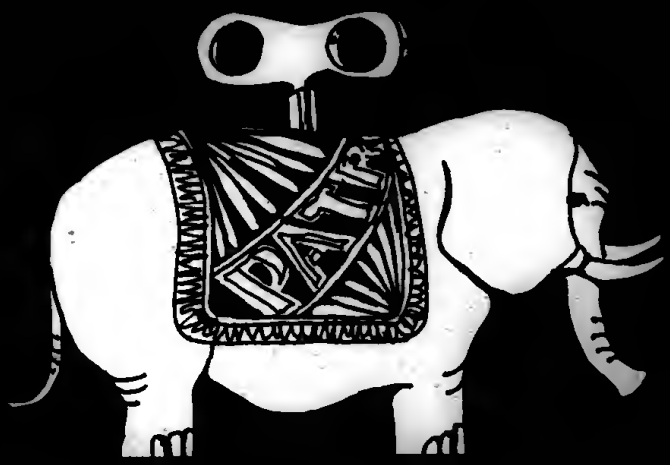

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†Gartner Group 1993 Symantec, Norton Administrator for Networks.

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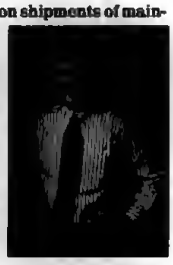
Hurry up and wait

The best way to gauge the progress being made along the road to the next computing paradigm is to ask the travelers, which I did at a conference of some 125 CIOs last month.

In conference discussion groups, each manager was asked, "Which of you are supporting mission-critical applications in a client/server environment?" A mission-critical application was defined as one whose failure produces serious consequences — such as lost income or the inability to provide key services — for the organization.

From this entire august group of intelligent, technically aware and astute managers, only three hands went up. And two of the three individuals actually described pilot projects rather than full-blown mission-critical applications.



Now consider the latest data on shipments of mainframes last year. Dataquest, Inc. and International Data Corp., which have tracked big box shipments for years, peg worldwide mainframe sales in 1993 at around $24 billion, not including disk drives, systems software and various other accoutrements. About 60% of this total was spent in the U.S., where mainframe MIPs are still increasing annually.

Of course, these figures pale compared with PC shipments. But when you consider them alongside the anecdotal information from the CIO conference and then consider the platforms handling mission-critical computing in your organization, you must conclude the following: in mid-1994, the real weight of information processing is still borne by old-style computing.

Why?

Perhaps another anecdote will help. I spoke with one manager who has presided over an effort to reduce his firm's total mainframe MIPs by two-thirds in the past five years, replacing mainframe processing not with LANs, as the PC weenies claim you can do, but with sturdy Unix boxes.

To accomplish this and keep the mainframe system up and running while it coughed up its applications one at a time, he hired some 400 Unix developers. In other words, it took a financial commitment that very few companies can or will afford.

A more common example might be the experience of another senior IS manager I met recently who supports some 500 corporate and financial users. He is struggling to get data off the mainframes — where it all resides — and into more user-accessible environments. Amid the ear-splitting din of user demands, the manager's boss froze expenditures on mainframe disk space and PC purchases. And this is a big, powerful company.

There are many pragmatic factors — some technical, some managerial — conspiring against the inevitable shift to the next computing paradigm. Whichever is bearing most heavily on your organization, rest assured you are not alone.

Bill Laberis

Bill Laberis, *Editor in Chief*
internet: *blaberis@cw.com*

Clear and concise

"Users to DEC: Just do it," (CW, April 25) quoted me on how effective Digital has been in communicating our marketing messages to customers.

To restate my position, Digital recognizes that in the past we were not as effective as we could have been in communicating clear and concise messages to our customers. However, over the past several months there have been a number of significant changes made in the sales and marketing area.

The impact has been extremely positive, and you can expect an even more aggressive focus, beginning July 1, with regard to specific sales and marketing programs.

William D. Strecker
Digital Equipment Corp.
Maynard, Mass.

OS/2 is brighter than you think

I must question the thought process that went into your most recent "Windows has won" article ["OS/2 desktop hopes dim," CW, May 9].

At this time, OS/2's sales are far exceeding all but the most optimistic expectations, the number of high-quality tools available to generate 32-bit OS/2 applications are extensive, and end users are beginning to see the appearance of very good native OS/2 applications. Even if it wasn't intended to be, the article looks, tastes and smells like fear, uncertainty and doubt. What's the point of spooking people away from a fine 32-bit desktop operating system that is finally getting its act together?

A little more balance in your coverage of OS/2 and other non-Microsoft products would make *Computerworld* a better paper than it already is.

Bill Keegan
Bedford, N.H.

I strongly dispute your comments in "OS/2 desktop hopes dim" that the battle for application control on the desktop is virtually over and that users want Windows applications, not those written natively for OS/2. Windows is at the end of its life and OS/2, with the release of Veralon 2.1, is a maturing, stable and fast-growing product.

The Windows vs. OS/2 debate is like comparing apples and oranges. If a fair comparison is to be made to OS/2 by your staff, I recommend that you install OS/2, Windows NT and Chicago side by side, use each for a week and then rewrite an article about OS/2 and its future.

James Merva
Los Angeles

Cobol and objects both have value

Regarding the two views on Cobol ["Is Cobol dead?" CW, April 25]: I agree with Mr. Pursell that Cobol is anything but dead. I also agree with Mr. Cunningham that object-oriented programming has the potential to improve quality and reduce development times.

A problem with many mainframe (Cobol) programmers is that they let themselves be intimidated by the claims of the new-language proponents and then react defensively. They deny the usefulness of the new tool.

A problem that zealots like Mr. Cunningham present is that they ignore reality. All sites have an investment in software and people. This investment simply cannot be thrown out overnight. Programmers have industry and company knowledge far beyond programming languages. Companies cannot discard these people and this knowledge just because someone else knows a different programming language.

Tom D. Hill
Cupertino, Calif.

John Cunningham convinced me: Programming is just what my company needs!

Those four-minute bug fixes sound great. Of course, our users are a bit old-fashioned and like to acceptance-test our work, but if we give them 45 seconds we can still break five minutes. Smalltalk, here we come!

Larry Jacobson
Portland, Ore.

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Harassed by users? Try this 'quick fix'

Michael B. Cohn

I have got bad news. Your users are reading *Computerworld*. The chief financial officer is leafing through *Popular Mechanics*. These guys know about wireless LANs, multimedia and object-oriented programming.

In the meantime, you're years behind the eight ball. You're still coding in assembler. You're buried up to your aspirin in 20-year-old systems and 20% budget cuts. Your executives expect year-2000 technology; you'd be happy just to get your shop into the '80s.

With all this, how do you convince users that you're evaluating oext-generation technologies, developing state-of-the-art systems and dangling on bigh-tech's cutting edge? You need a quick fix. You can get out of this mess even if your IS plan is older than most of your ties. Accomplish a year's worth of work in one Tuesday afternoon! Just fire up a typewriter, crank out a few memos and tell the world you've been working oo the following:

- The network. First and foremost, say you're doing something aboot the network. Even users know you can't do anything until you've got a powerful pipeline enterprisewide. Tell folks you've assessed global voice, image and full-motion video requirements. Tell them you've evaluated WANs, T1s, ATM and a bunch of other juicy acrooyms. Tell folks you've just implemented a companywide solution for the transfer of character data — just don't tell them the solution is Federal Express.
- Workstations. Say you're analyzing corporate workstation requirements. In fact, maybe you should do this first. After all, what good is a network without a way to get on it? Are they tired of dumb terminals? Then boast how you've wisely waited for faster chips and rock-bottom prices. Tell them you'll install the new stuff any day now ... as soon as the layoffs are over, restructuring stops and things get back to normal. This should buy you a decade.
- Applications. You can't forget about user applications. I suppose you should do this first. What's the point of a 786 chip or 16M bytes of memory if you don't have software that uses it? Here's where you talk a lot about client/server, how you're planning to migrate legacy systems off the mainframe, build an object-oriented repository and re-engineer all departmental processes. No one could argue with a strategy like that. Of course no one could pull off a strategy like that.
- The user interface. Jump into GUIs with both feet. In fact, do this first. Heck, any application will do once you've slapped on a sexy front end with that nice PC look and feel. But users must understand: GUIs take time. They're not just screen-scrapers and icons. There are issues such as usability, compatibility and OS/2 vs. DOS vs. Windows NT vs. Lord knows what else. With all this, I wouldn't worry about the three hours a day the users spend navigating boring monochrome screens. Instead, I'd worry about the mysterious 21 hours when the system's usually down.
- The information superhighway. Forget all the other junk. Nothing pumps up users like the mythical superhighway. Definitely do this first. Promise passwords and log-ons and electronic IDs. Talk about videoconferencing, telecommuting and interactive TV. Of course, you may take some heat when eons go by before anything is commercially available. But even a handful of huge, high-resolution video files can keep your users preoccupied for years ... especially if you make sure they're trying to download with a 2.4K bit/sec. modem.

Accomplish a year's worth of work in one Tuesday afternoon!

Cohn works for a major computer vendor. His humor book, *Fear of Computers*, will be released in June.

Replace waterfall method with workflow method

Patricia B. Seybold

The waterfall method of application development doesn't work anymore; don't use it. That was the message delivered at our recent Technology Forum by project leaders from GTE, UPS, Cigna, EDS, Hughes Aircraft, PG&E, Johnson & Higgins, American Airlines, Andersen Consulting and other firms.

These are companies that have brought large, ambitious projects to fruition in the past two years. They're all using a new development methodology that speakers referred to as the "workflow method."

The old waterfall method divides application development into a series of sequential, yet overlapping steps. It is part of a structured approach to designing, building and deploying information systems based on prespecified functional requirements. The presumption is that you will engage in a single, top-down pass through a series of development activities.

What's wrong with this picture? According to Charles Troxel, director of Enterprise Strategic Architecture for GTE's telephone operations, this traditional approach doesn't address business processes, requires a long cycle time, presumes a large-scale development effort and achieves the wrong goal (an already-obsolete application) at a high cost. The only thing the waterfall method has going for it is that many programmers are trained to use it.

The only thing the waterfall method has going for it is that thousands of programmers are trained to use it.

Instead, Troxel recommends the workflow method. You start by redesigning business processes. Then you define business objects, roles, tasks and rules — the same elements you would use to implement an automated workflow. You combine process definition, functional design, interface design and application development into a series of overlapping spirals. Each spiral includes the involvement and sign-off of the application's end users. You cycle through each spiral in overlapping parallel, rather than serial steps. And you don't iterate once; you run through the four-spiral process at least three or four times.

The resulting applications are designed faster, deployed sooner, map directly to the business process, deliver immediate business benefits and are less costly to maintain.

This methodology also leads to applications that are "never done."

At Cigna, Alan Kirk and Jim Dykas are now on the third version of a Benefit Information Decision Support system. The design was started in 1991 as part of a re-engineering project. The application lets users quickly and unambiguously define the health benefit plan a customer desires, while maintaining consistency across all Cigna locations. The small team delivered its first production release of the system in six months. Since then, they have delivered a substantially new and improved version of the system each year for three years.

The current methodology features a weekly design review with all users and "sprint" deliverables of new code every two weeks. One of Cigna's challenges is to stay abreast of the rapidly changing health care field. With this methodology, Cigna feels it is never behind the curve in meeting customers' requirements.

Isn't it time you ditched the waterfall methodology and opted for the workflow model of business process design, rapid application development and continuous improvement?

Seybold is president of Patricia Seybold Group in Boston. Her Notes address is Patricia Seybold@PSOCG. Her Internet address is PSeybold@PSGroup.com.

The PowerBook 500 Series. In brief.

Apple

The PowerBook 500 Series. In depth.

Welcome to the next generation of PowerBook.

Four new Apple® PowerBook computers that redefine, once again, what a notebook computer can be.

One look tells you these are very new indeed. The flowing shape. The sleek lines. The futuristic curves.

But the new appearance is only your first clue to the dramatic changes, refinements and improvements we've engineered inside.

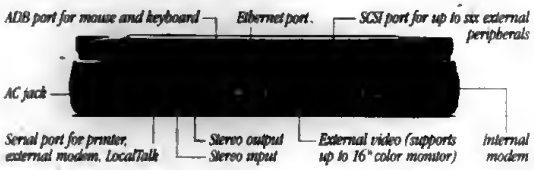
More power The PowerBook 500 series is designed around the Motorola 68LC040 processor—a chip that offers far more power than the chips that powered previous PowerBook models.

In benchmark tests, the new PowerBook 540c running at 66/33 MHz was 80% faster than the fastest previous PowerBook. (Its gray-scale counterpart, the 540, is equally fast.) And with the same chip running at 50/25 MHz, the 520 and 520c aren't far behind.

The revolutionary new Apple trackpad makes pointing and clicking even more intuitive than before

We've supported that processing power with 80% more memory capacity (up to 36MB), 56% more internal storage capacity (up to 320MB) and built-in high-performance Ethernet networking (as well as LocalTalk®).

This makes the PowerBook 500 series powerful enough not only for word-processing long documents or Fortune 500-sized spreadsheets, but also for doing fieldwork with programs like Adobe Photoshop and other high-end, graphics-intensive programs.



Add SoftWindows™ software from Insignia Solutions Inc., and you've got the ability to run MS-DOS programs as well.

The 500 series offers the possibility of even more power later, because you can upgrade to PowerPC™ technology when it becomes available for PowerBook. (Contrast this with 486 notebooks that aren't upgradable to Pentium technology.)

More precision. Kindly direct your attention to the revolutionary new Apple trackpad pointing device that replaces the trackball and is centered on the comfortable palm rest.

The trackpad brings a new level of precision to PowerBook computing. The trackpad's ultrasensitive surface senses the touch of your finger, tracks it across the pad and moves the cursor across the screen accordingly.

This intuitive method of moving the cursor, combined with the new dual-scan and

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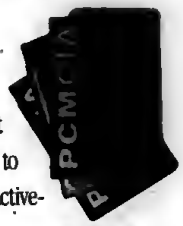
active-matrix screens, gives you much more precise control over the location of the cursor and makes extremely detailed work possible (it's precise enough for photo retouching) wherever you happen to be.



These are the first PowerBook computers to use PCMCIA technology.

The PowerBook 540c has what may well be the finest screen ever to grace a notebook computer: an active-matrix, 9.5-inch display capable of showing thousands of colors at the same time. Combined with QuickTime™ video and built-in stereo sound, these screens make for truly spectacular presentations in the most unspectacular locations: on a crowded plane, in a noisy diner, wherever.

More expandability. The PowerBook 500 series includes a lot of things that aren't standard on ordinary notebook computers. Things like built-in file sharing and networking. Stereo sound and video-out. Macintosh PC Exchange™ software, eWorld™ and PowerBook File Assistant file-synchronizing software. Plus Apple Remote Access software that allows a modem-equipped PowerBook to work with the Macintosh® computer on your desk, and with your network, as if you were sitting in your office. Even during those times when your office happens to be thousands of miles away.

Still, there's a lot of room to grow. These are the first PowerBook computers to come with a built-in Processor Direct Slot (PDS) for third-party expansion modules. And they're also the first ones to offer the optional plug-in PowerBook PCMCIA Expansion Module, so you can use two Type II or one Type III PCMCIA card for even more flexibility.

You can even install an optional 19,200-baud internal modem to send and receive information quickly, and when it becomes available, a third-party cellular interface for convenient wireless access to your office network.

More battery life. Even the batteries have been redesigned. The PowerBook 500 series can use two PowerBook Intelligent Batteries. These high-powered NiMH batteries use special processors within each pack to monitor battery power and the new PowerBook Control Strip—power management software that tells you exactly how much time you have remaining.

	PowerBook 520	PowerBook 520c	PowerBook 540	PowerBook 540c
Processor	Motorola 68LC040 @50/25 MHz		Motorola 68LC040 @66/33 MHz	
Display	FSTN Gray-Scale	Dual-Scan Color	Active-Matrix Gray-Scale	Active-Matrix Color
Hard Drive	160MB	160MB	240MB	320MB
Memory	4MB DRAM expandable to 36MB			
Battery Life	Up to 7 hours with 2 batteries		Up to 6 hours with 2 batteries	
Audio	16-bit stereo in and out, built-in stereo speakers and mono microphone			

The result is 40% more battery life than before—up to seven hours per charge—when using both batteries.

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More information. While this has been an abundance of information, by any standard, it can't serve as a substitute for a personal demonstration. Something that can be easily arranged at your authorized Apple reseller. To find the one nearest you, simply call 800-732-3131, ext. 100. (In Canada, call 800-665-2775, ext. 910.)

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IBM stalls NT version for PowerPC

By Ed Scannell and Stuart J. Johnston

■ Taking a less democratic approach to bundling operating systems software, IBM officials now say it is highly unlikely that the company will offer Windows NT to its PowerPC customers before its own OS/2 for PowerPC is ready.

A version of Microsoft Corp.'s Windows NT for PowerPC is expected to be commercially available in the early fall, about the same time IBM is expected to ship its first Power PC-based desktop systems. However, IBM may not ship OS/2 for the PowerPC until as late as next year's first quarter.

Despite what may turn out to be a delta of a few months between delivery of the two operating systems, IBM officials suggested it may be in IBM's best interest to bundle its product with the PowerPC first. Such plans may appear to run counter to IBM's original promises to give its business units the autonomy to support third-party products when and how they wish.

"It's true the port of NT to the PowerPC is far along, and we haven't publicly [demonstrated] OS/2 [for the PowerPC]. But I doubt we'll ship [Windows NT] before OS/2. We suspect at the moment they will be released around the same time," said Miles Barel, worldwide Workplace OS brand manager.

Missed opportunity

Some industry observers were more blunt in their assessments of what is behind IBM's thinking.

"That's the kind of thing IBM would do. It hurts the adoption of NT on their machines, but they do not want NT to be popular on their platform. If you absolutely have to run NT on their platform, they'll sell it to you, but they don't want to sell it to you," said David Coursey, editor of industry newsletter "PC Letter" in San Mateo, Calif.

"I think IBM has kind of blown it with the PowerPC. If anybody had early access to the chip, it was them. Imagine if it was shipping now with the Power Mac — OS/2 would be way faster than NT even," said Jesse Berst, editorial director of "Windows Watcher," a newsletter in Redmond, Wash.

Despite IBM's apparent maneuvering, most corporate information systems buying decisions on PowerPC-based systems appear to be driven by what shape competing operating systems and compliant applications are in. If the port of NT is done well, and is available several months earlier than OS/2 for the PowerPC, it could apply pressure to IBM's decision-making.

"If you delay [the bundling of] NT until OS/2 is ready, all you're doing is delaying the PowerPC to a wider market. IBM could be cutting off its nose to spite its face," said David Pinkard, senior networking technical specialist at Mallinckrodt Medical, Inc. in St. Louis.

"The real question won't be the demand for the PowerPC but for NT or OS/2," said Ronan McGrath, IS director at Canadian National Railways in Montreal. "The corporate

IBM, *page 48*

Foreseen circumstance

The Microsoft executive who recently confirmed that Cairo will be late predicted less than five months ago that such a slip would "dramatically" hurt Windows NT sales.

In a memo written Dec. 31, 1993, Jim Allchin, vice president of the business systems division, said NT sales will be endangered if Microsoft does not offer a version with the new user interface expected in Chicago, also known as Windows 4.0. Chicago is due out by year's end [CW, March 28].

"Cairo must ship by mid-year 1995. Period. Not having the new [user interface] on NT will hurt our sales dramatically. We can survive until mid-'95, given when Chicago will ship, but it will be very, very damaging after that," the memo said.

Chicago is scheduled to go into widespread beta testing this month and will sport a new object-oriented user interface that the company claims will be more intuitive to first-time users.

Cairo is the code name for a major update of Windows NT, which was originally slated to ship in the first half of 1995. One new feature will be a superset of the Chicago user interface. An interim update to NT, code-named Daytona, is due this summer, but it will not feature the new user interface.

"To have a low-end user interface on your high-end operating system is crazy," said Jesse Berst, editorial director of the "Windows Watcher" newsletter. "I do think it could impact sales of NT if the gap is longer than six months [between shipment of Chicago and Cairo]."

Still, he said, Cairo programmers might hold out for one potential, although ironic, break — Chicago is rumored to be running late, too.

"The only possible saving grace is that Chicago may be so late that the gap isn't as long," Berst said.

—Stuart J. Johnston

Vendors throw weight behind notebook updates

By Michael Fitzgerald

Ah, spring, that time when information systems managers' thoughts turn to buying notebooks. Or so vendors seem to think: New notebooks are popping up like tulips in Holland.

NOTEBOOKS

The trend is to put an Intel Corp. 25/75-MHz DX4 into a box, stick in some multimedia features and holler, "Come and get it!"

"It's almost like it's 'premium refresh' time," said Bruce Stephen, an analyst at International Data Corp. in Framingham, Mass. Vendors are releasing updates of their high-end notebooks in part to keep up with rivals, according to Stephen.

Some companies such as Acer America Corp. are focusing on putting in fewer features and keeping prices down, Stephen said. Acer's new line has a notebook with an active-matrix color screen for $3,500.

Some users said they would prefer to see vendors stuff fewer features into their high-end notebooks and make them lighter. Most now weigh 6 to 7 pounds.

"I would prefer that they knock the weight out and give us less features," said Victor Mutnick, corporate vice president at New York Life Insurance Co. Mutnick said salespeople are not interested in multimedia features for making their sales pitches, for instance. "A salesman still feels it's a personal sale. The only use I could see right now for multimedia is training, and we don't have the mechanisms in place to take advantage of it," he added.

One trend that continues strong is the move toward color. Some vendors such as IBM PC Co., Texas Instruments, Inc. and Acer released product families that have only color screens.

"We'll take the color because it's a world of difference," said Joseph Barrett, a lead consultant at Whirlpool Corp. in Benton Harbor, Mich. "Color is much easier to work with. It's not considered a luxury anymore."

Wide selection

Among the latest announcements were the following:

- Acer released two new versions of its AcerNote notebooks, one using the 75-MHz DX4, one using the 25/50-MHz 486DX2. The base model AcerNote 760, a dual-scan, passive-matrix color notebook with 4M bytes of memory and a 340M-byte hard drive, costs $2,599. The AcerNote 780, with 8M bytes of RAM, a 340M-byte hard drive, an active-matrix color screen and a 25/75-MHz DX4, will sell for $3,999.
- Ambra Computer Corp. released three new notebooks, including one based on Intel's 33/100-MHz DX4 chip. The 6.7-pound N100 and N75 notebooks come only in color, with either thin-film transistor active-matrix or dual-scan passive-matrix color screens. The N100 uses a 9½-in. active-matrix screen, while the N75 uses a 10.3-in. passive-matrix screen. The notebooks also come with local bus video, a 350M- or 450M-byte hard drive and integrated audio. Prices range from $3,199 for the N75D with a 25/75-MHz DX4 and a passive-matrix color screen to $5,299 for the N100T.
- Zenith Data Systems last week an-

Low latitude

Dell Computer Corp. cut prices in the U.S. between 8% and 14% on its Latitude line of notebooks, bringing the price below $3,000 for an active-matrix color notebook.

Notebooks, *page 44*

Compaq, PictureTel envision teleconferencing

By Michael Fitzgerald

Compaq Computer Corp. and PictureTel Corp. have agreed to build videoconferencing capabilities into computers. The five-year strategic alliance is expected to produce its first products by year's end.

The two companies signed a memorandum of understanding, which will become a formal agreement over time. The companies said the first products will comply with the H.320 standard, an international standard for videoconferencing transmission.

Analysts said videoconferencing is probably not going to be a crucial application in the near term, although Intel Corp. and other vendors have been pushing initiatives to bring videoconferencing to market both cheaply and quickly.

"I think most people when they need to collaborate don't need video collaboration — they need voice communications. And the next thing they want is data communications," said Jeffrey Henning, an analyst at BIS Strategic Decisions in Norwell, Mass. BIS projects that by the year 2000, only 8% of PCs will come with built-in video phones.

However, Compaq and PictureTel will be to market before that.

Desktop videoconferencing is expected to appear in the late third or early fourth quarter in Compaq's high-end DeskPro/XL, announced recently by the Houston-based vendor. Compaq can support this through the VESA Advanced Feature Connector, a standard graphics-to-video subsystem connector specified by the Video Electronics Standards Association. This comes standard on the DeskPro/XL.

"Plug-in videoconferencing will be one of the ways that Compaq puts its toes in the application solution market," said John Dunkle, president of market research firm WorkGroup Technologies, Inc. in Hampton, N.H.

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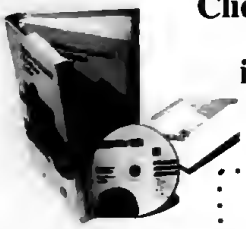

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Notebooks

CONTINUED FROM PAGE 43

nounced the Z-NoteFlex, a modularly designed high-end Notebook family. The screen, battery, floppy disk and hard drive are all removable, and the processor is user-upgradable.

Based on chips from the 33-MHz 486SX to the 25/75-MHz DX4, the new line has local bus video and a choice of monochrome, 9½-in. active-matrix or 10.3-in. passive-matrix color screens. Hard drives come in 200M-, 340M-, 450M- and 520M-byte sizes. Stereo sound is built-in, as is a speaker and microphone.

Prices range from $2,599 to $5,499. Zenith Data will also offer the FlexShow multimedia docking station.

- TI introduced the first significant revision of its TravelMate notebook line in three years with the TravelMate 4000M, aimed at the high-end multimedia world.
- The PC Co. released the ThinkPad 755, a chip upgrade from the 750 with a built-in microphone. It also released the ThinkPad 360 family [CW, May 16].
- Apple Computer, Inc. released new PowerBooks [CW, May 16].

One user contacted found the Zenith Data unit impressive.

"Their price/performance is making us take a look at them," said Michael Radigan, manager of Xerox Corp.'s Nova sales force automation project. Radigan said the modular design, particularly the removable hard drives, was a plus.

"I demand a removable hard drive so if a sales rep drops the machine and can't use the screen, you can pop the hard drive into another machine and keep rolling," Radigan said.

Analysts said TI's technology and Acer's pricing made them interesting dark horses in the notebook market.

Supply of active-matrix color notebooks still looks to be constrained, evidenced in part by the products released by some small vendors. For instance, Identity Systems Technology, Inc. in Carrollton, Texas, released a series of notebooks with either monochrome or passive-matrix color screens but no active-matrix color versions.

IBM hangs tough with high-end PCs

Division hopes to regain market share from Compaq; pricing starts at $1,620

By Jaikumar Vijayan

After a quarter in which unit sales of its desktop products slipped to third place in the industry, the IBM PC Co. is hoping its new line of PCs will help it regain some of the turf it has lost to a hungry and seemingly unstoppable Compaq Computer Corp.

Last week, IBM took the wraps off its Performance series of high-end PCs, which will ship with a price tag of around $1,620 for an entry-level system.

The company also slashed prices on its Pentium-based ValuePoint line by up to 25%. For instance, a 60-MHz Pentium system that used to cost $4,149 will now ship for $3,170.

The systems feature advanced graphics capabilities and offer Peripheral Component Interconnect (PCI) and Video Electronics Standards Association (VESA) local-bus support.

Battle benefits

For corporate users, the increasingly intense battle between two of the largest desktop vendors promises more aggressive pricing and support options from IBM, analysts said.

"I think there's a lot of pressure on IBM to reduce prices and open new markets," said Jennifer Munson, a research analyst at Summit Strategies in Boston.

While users welcomed the addition to the ValuePoint family, some expressed concern that an IBM effort to compete on pricing could undermine the company's ability to offer quality support.

"Traditionally, IBM support has come at a price. I don't see how they can continue to offer this if they compete in the market on pricing," said Robert Haas, manager of corporate information systems at interco, Inc. in St. Louis.

> "IBM is hoping to make the new line its desktop platform for the next few years at least."
>
> —*Jennifer Munson, Summit Strategies*

For the moment, the Performance series will be sold as a separate line within the ValuePoint family, but analysts say they expect it could soon become IBM's flagship desktop platform with its own brand identity.

"IBM is hoping to make the new line its desktop platform for the next few years at least," Munson said.

By trying to create a separate brand identity for the corporate segment while still retaining its familiar and lucrative ValuePoint brand identity, IBM is making sure it is not losing any brand equity, analysts said.

The Performance series, which IBM said it announced after extensive feedback from its user base, includes features that the company expects will make it attractive to the corporate customer.

The series tops out with a 50/100-MHz DX4-based system. A four-device attach integrated drive electronics implementation provides up to 4G bytes of hard-disk availability and CD-ROM support. The plug-and-play systems are Energy Star-compliant. Expansion slots depend on form factors; the minitower model, for example, has eight.

While the VESA product will start shipping immediately, PCI support will not be available until June, according to IBM.

For Jim Oswald, director of MIS at Jockey International, Inc. in Kenosha, Wis., the new product announcement is something he expects as a matter of course from IBM. "I have always found IBM to be price-competitive with companies like Compaq, and they are the most compatible systems around."

He welcomed the increased graphics capabilities of the Performance series as a good strategic move by IBM, though he sees no immediate use for it himself.

Others said they wanted more business audio support on the series. "Users want whistles and bells these days. Increased multimedia support is going to be absolutely necessary," Haas said.

The debut of the Performance series comes at a time when the fate of IBM's PS/2 line looks increasingly uncertain, analysts said. With both the Performance series and the PS/2 lines being positioned in more or less the same market segments, product differentiation could become even more difficult, they said.

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Reliability

Microsoft waves good-bye to suggested retail prices

By William Brandel

■ Recently, Microsoft Corp. acknowledged the obvious: Suggested retail pricing is no longer a valid measure of what users pay for software. So as of July 1, Microsoft will no longer publish suggested retail prices for its products.

Microsoft officials said they made the move for a few simple reasons. First, volume deals to customers have generated such large discounts that suggested retail prices have become increasingly irrelevant to street prices. Some resellers say these discounts, coupled with electronic distribution, have reduced suggested retail prices by up to 70%.

Next, bundled software deals — either in the form of software bundled with PC hardware or as a bundle of applications sold at the price of one — have undermined the price valuing structure in the market. The bottom line today is that suggested retail prices no longer play a role in how users buy or assign value to software.

"Suggested retail prices haven't been a factor for a long time," said Deems Davis, vice president of information systems at Fireman's Fund Insurance Co. in San Rafael, Calif.

Another user at a major financial firm in Boston was more to the point. "Suggested retail prices are a joke," she said.

At the same time, Lotus Development Corp., Novell, Inc. and WordPerfect Corp. continue to publish suggested retail prices for their products. Spokesmen for Novell and WordPerfect said the companies had no comment on the subject. However, a Lotus spokesman said that firm is taking no action on its suggested retail price policy.

A walk down discount street

Volume discounts and corporate license agreements render talk of "list prices" meaningless

Quantity	Unit price	Total

Source: Corporate Software, Inc., Canton, Mass.

"I've sat in meetings with IS people at large companies, and we've asked them if they thought we should change our suggested retail price policy," the Lotus spokesman said. "They say that they don't care about it."

For this very reason, Microsoft says it is now doing away with suggested retail prices. However, Microsoft says it is also abolishing them because it is now entering joint ventures that will result in products aimed at the non-business, consumer market.

"Consumer buyers are less experienced at dealing with suggested retail prices and street prices," said Geoff Saunders, marketing manager for channel policies at Microsoft. "They will either be confused or misled by the discrepancy."

Saunders used Microsoft's Excel spreadsheet as an example. Excel has a list price of $495. However, it usually sells for about $325, Saunders said.

"A naive buyer might get confused or scared off by the $495 suggested retail price if they don't understand how software is valued," Saunders said. "It's not only irrelevant for the user, but it would be confusing for the consumer."

Like products in grocery stores, suggested retail prices once played a meaningful role for both vendors and customers in the software business. With little competition, a software vendor could recommend what its product could sell for in a retail environment, and buyers were often willing to pay the price.

Negotiating game

However, with competition amongst a number of software publishers and the channel dealers they sell through, the standard pricing game has been determined by how much of a discount the buyer can negotiate.

"The business now is 'cost plus,'" said a spokeswoman for Software Spectrum, Inc. a corporate reseller based in Garland, Texas. Cost plus refers to the simple retail concept of covering wholesale costs and then skimming a profit margin over costs.

Vendors say that although they realize suggested retail prices are largely irrelevant, they will remain in the market in one form or another. While suggested retail prices were once a valid way to determine price points among different vendors' products, they still hold some meaning in the channel, so resellers are taking on the role of defining those prices for software products.

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IBM stalls

CONTINUED FROM PAGE 43

world today largely has this attitude of 'show me.' If NT turns out to be robust and takes good advantage of the PowerPC, then it may do well."

Some executives at IBM's Power Personal division have lobbied IBM corporate to ship Windows NT with their upcoming systems. They say NT will significantly increase their chances for selling more hardware. But some say that if they must wait for OS/2, they could have difficulty making sales quotas.

"We would like to sell both products, absolutely. But if we wait a few months for Workplace [OS/2 for the PowerPC], then it will make it a little tough to get [PowerPC machines] off to a fast start," said one source within IBM who asked not to be identified.

Other IBM executives, however, say the pressure on divisions such as Power Personal to make sales quotas right from the product launch have been relaxed. Richard Thoman, IBM senior vice president and group executive, said he is not concerned with volume shipments of PowerPC-based systems and that this year will be spent as a learning experience "getting it right."

What perhaps makes it easier for IBM to hold off delivery of NT is the system's less-than-spectacular success in the market. While Microsoft officials have not released sales figures, one executive said the company will likely not make its goal of 1 million units shipped in its first 12 months of availability.

"The truth is, I don't know [if Microsoft can reach its goal], but I don't think so. The unfortunate thing is we shouldn't have been trying to quantify it like that," said Jim Allchin, vice president of Microsoft's business systems division. "The server side is doing better than we expected, and for the workstations we are doing very well — but it's tied to the workstation market, not to a secretary's desktop," Allchin said.

Another reason to prefer OS/2 for the PowerPC to NT, at least on the desktop, is NT's memory requirement. The available version of NT requires 16M bytes to run well, and its successor, code-named Daytona, will require at least 12M bytes. IBM officials say they expect OS/2 for the PowerPC to run well with 8M bytes.

"Whoever said NT would be a great desktop operating system? At 16 megs or more, it certainly won't be that," an IBM spokeswoman said.

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Rover cars begin multimedia ordering

By Elizabeth Heichler
LONDON

The UK's Rover automobile manufacturing group is installing a new multimedia system based on client/server technology in its dealers' showrooms that will take orders directly from customers online and then link the information to inventory and manufacturing.

After customers select their preferred model and options on a highly visual system that includes video images of custom-configured cars in action, the dealer can access a database to find out if the car desired is ready for immediate delivery. If not, the dealer can add the order specifications to the production schedule held on Rover's main server.

The system will improve the level of service Rover offers its customers by providing cars that directly address their needs, said David Lawrance Hallgarth, project director at Rover. "The cars are able to be delivered from the factory to the customer with a minimum of delay, which is more cost-effective for the customer and our dealers," he said.

Digital Equipment Co. Ltd. UK is installing the system at Rover's 730 dealerships in the UK. It uses Microsoft Corp.'s Windows NT on the server and Windows 3.1 on the clients in the showroom; both will run on Intel Corp. I486-based hardware. Future additions to the system will likely require upgrades to Alpha-based servers, a Digital spokesman said. The server holds an Oracle Corp. database with regional information and acts as a gateway to the main server.

Heichler is a European correspondent at the IDG News Service.

Disappearing disks point to weakness of software control

By Peter Young
BRISBANE, AUSTRALIA

The theft of thousands of disks from an Australian university highlights a dilemma facing many organizations.

Disks that fit in shirt pockets are becoming as common as paper clips — and as prone to petty pilfering.

The dilemma for purchasing officers is whether their losses warrant the expense of ordering "private label" disks, which have corporate logos stamped on disk shutters or printed on labels.

An incident involving the theft of nonpersonalized 3½-in. disks this year at the Queensland University of Technology showed the seriousness of the problem. A laboratory technician was caught ordering thousands of disks and reselling them to a Queensland dealer. The scam was discovered when the disks' maker, Verbatim, noticed a distortion in the local market and alerted the university.

Verbatim Queensland manager Richard Conway said the employee was flushed out by a sting operation that marked some Verbatim boxes. These boxes went through the pipeline and emerged on a dealer's shelf, he said.

The dealer was not charged, but the technician was fined $5,000 in court and ordered to make restitution of between $10,000 and $20,000, said Richard Bright, university purchasing officer of finance.

Paradoxically, the case has not persuaded the university to buy private label disks.

"In hindsight, those disks would have been harder to sell had labeling been in place," Bright said. "But I don't think large-scale fraud is likely to happen again, and my personal view is that putting a company logo on a disk doesn't make it less attractive to pilfer."

That is not a universal sentiment.

"A lot of people in private and government sectors inquire these days about private logo diskettes to discourage pilfering," said Scott Dillon, a regional manager at Memorex Computer Supplies.

Demand on the rise

John Taylor, 3M Australia's sales and marketing manager for memory technologies, estimated that 20% of his customers now want private labels.

"They talk in terms of good company identification, particularly in the case of organizations such as consulting companies whose diskettes circulate in front of customers," Taylor said. "But there is no question that an underlying issue is to try and limit pilfering. With the growing number of home computers, many organizations are going to the trouble of personalizing the diskettes in the hope of discouraging home use."

Disk makers said they would have seen a stampede toward private labels if pilferage rates were as high as 10%. They may be less than 1%, but a precise figure on what disk theft is costing organizations remains rubbery.

Young is a correspondent at Computerworld Australia.

Briefs

Unisys to license CA product

Unisys Corp. has signed a multiyear contract to license **Computer Associates International, Inc.'s** CA-SuperProject for Windows project management software. Unisys plans to use the software to help support its information services division.

Users want long battery life

A research study conducted by **H&M Consulting** in Sunnyvale, Calif., revealed that users are willing to make trade-offs in the weight and size of portable computers in return for a little extra battery life. The survey of corporate executives with mobile work forces of 500 to 1,000 revealed that users ranked long battery runtime and screen quality as the most important features they would like to see on their portables. More than 86% of those surveyed said they would be willing to pay at least $100 more to accept thicker and heavier portables in return for a battery with 12 hours of runtime from a single charge.

Zenith, Proxim team

Zenith Data Systems said it would collaborate with **Proxim, Inc.** to develop a series of mobile computers with wireless capabilities. The companies provided few details on these products but did say they planned to develop handheld computers that integrate Proxim's RangeLan2 technology. The first products, due this year, will target workers in campus settings or single building environments.

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WordPerfect aims to put voice into Windows

Deal with Dragon would deliver API this year

By Ellis Booker
CHICAGO

For the pathologist up to her elbows in a cadaver, voice-recognition systems are a blessing because they obviate the need for a keyboard to enter commands or data. But aside from such niche applications — and despite important improvements in the accuracy of recognition software and support for general-purpose sound boards — speech recognition has failed to find a broad consumer audience.

That could change now that WordPerfect Corp., the world's largest word processing vendor, has officially blessed the use of speech. The vendor recently announced plans to develop an integrated voice recognition product for its Windows products. WordPerfect will use speech technology from Dragon Systems, Inc. in Newton, Mass.

The two companies plan to deliver a general-purpose application programming interface (API) for speech-enabling Windows applications by the fourth quarter.

"This really seems like it could be useful in a practice like mine," said Martin Indik, a Princeton, N.J., trial lawyer and WordPerfect user. But he balked at the anticipated $1,000 price point. "If I had a thousand more dollars, I'd spend it on beer," Indik said.

Speech recognition systems from Dragon and others can already be configured to command-and-control software applications. But Larry Holmstrom, director of advanced technology marketing at WordPerfect, said such loose integration requires following menus and tends to be tedious.

"Our API will let you say 'Print five copies' and have it happen," Holmstrom said.

The WordPerfect/Dragon API, which is slated to be available in the fourth quarter, will ship with the standard WordPerfect developer's kit, Holmstrom said. The API will be accessible through WordPerfect's PerfectFit Technology, a set of tools for developing WordPerfect applications.

While prices have not been set for WordPerfect's speech-enabled products, they will likely start at under $1,000, according to WordPerfect officials. A 66-MHz, 486-based PC with 16M bytes of RAM and any 16-bit sound board will be required.

Applications that are actively aware of natural language input will support features and interactions that can be done more easily by voice than by keyboard.

The announcement is very significant, but "the verdict is still out about speech as a general-purpose alternative," said William Meisel, editor and publisher of "Speech Recognition Update," a newsletter based in Encino, Calif. But he noted that speech systems have improved in accuracy and power, and "there's room for a lot of creativity for software vendors" in speech-enabling their products.

"Yesterday's technology makes for today's corporate rust."

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Europe must wait longer for Chicago

Although Microsoft Corp. officials say the next version of Windows is on target for delivery before the end of the year in the U.S., localized versions of the upgrade are not expected to hit European shelves until early 1995.

While the upgrade, code-named Chicago, is being developed concurrently in English, French and German, these versions will not all be released at the same time, said Tom Evslin, general manager of server applications at Microsoft.

"The German and French versions take longer to be released," he said recently during a European tour to demonstrate Windows 4.0 and Microsoft's Mail program.

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Dantz Development Corp. has announced Version 2.1 of Retrospect and Retrospect Remote Macintosh backup software.

According to the Orinda, Calif., company, Version 2.1 takes advantage of Apple Computer, Inc.'s SCSI Manager 4.3, which supports direct memory access and SCSI disconnect/reselect.

Features include automatic, unattended operation, file selection criteria and full security.

A new installer is included, and the products can support all Macintosh devices, along with hard disks, optical drives and servers. Retrospect and Retrospect Remote also support more than 150 different tape drives.

Retrospect costs $249; Retrospect Remote is available for $449.

▶ *Dantz Development*
(510) 253-3000

Avantos Performance Systems, Inc. has announced Review Writer, an employee performance review application for Windows.

According to the Emeryville, Calif., company, Review Writer reduces the time it takes managers to write performance reviews.

The package features on-screen advice, a legal text-checking facility and predefined forms for 15 general job types including department managers, project leaders and salespeople.

A spell checker, encryption and password protection are included.

Review Writer also has a QuickBuild Mode that walks users through steps of the writing process and a Document Mode that has a more flexible approach.

Review Writer costs $129.

▶ *Avantos Performance Systems*
(510) 654-4600

Automap, Inc. has annouced the Automap Pro, a multimedia mapping application.

According to the Bellevue, Wash., company, when travelers input their starting point and destination, the program instantly produces customized maps and driving directions. These can include stops, meeting times and driving styles.

Automap Pro provides comprehensive route planning and customized database capabilities.

The product includes personalized databases with customized icons; mapping features with zoom capabilities; a "geocode" function that converts ZIP codes to coordinates, transferring each database record to its map position; and a Windows-based interface.

Automap Pro costs $399.

▶ *Automap*
(206) 455-3552

Product shorts

Data Description, Inc. has introduced the Data Desk 4.2, exploratory data analysis software, which includes PowerPC native mode numerics and graphics. The product runs critical computations in native PowerPC mode, achieving speed gains of four to six times over "compatibility mode" and over 680x0-based machines. Cost: $45. Data Description, Ithaca, N.Y. (607) 257-1000. . . . **Logitech, Inc.** has announced TrackMan Voyager, a portable trackball that converts into a desktop stationary unit or handheld presentation device. TrackMan Voyager has a three button design and is equipped with Logitech's Enhanced MouseWare software Version 6.4. Logitech, Fremont, Calif. (510) 795-8500. . . . **Iconovex Corp.** has announced Indexicon for WordPerfect for Windows, automatic indexing software. With a mouse click, the product "reads" user documents, locates terms and phrases and generates a back-of-the-book-style index. Cost: $149.99. Iconovex, Bloomington, Minn. (612) 943-0292.

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The course of computing is hereby changed.

The course of computing is hereby changed.

From the old.

*(Actual size.)**

*The chip on the left is getting a little old.

Its 15-year-old technology has been pushed to the limit. It worked well enough for yesterday's character-based computers, but it's having a hard time keeping up with the demands of today's computers and software.

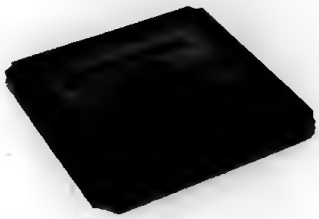
The new PowerPC™ microprocessor from Motorola, however, is just getting started.

It's based on advanced RISC (reduced instruction set computing) technology, the technology most experts agree is the only way to reach the performance levels required by the new generation of computers and software.

The PowerPC Microprocessor. *The RISC Chip.*

*Both chips are represented at actual size

To the new.



(Smaller, cooler, faster, cheaper.)

Taking full advantage of its RISC technology, the PowerPC microprocessor runs faster, runs cooler, occupies less space, consumes less power and costs less than the chip on the left.

The first computers based on the PowerPC microprocessor are now arriving. Apple's new Power Macintosh™ computers are here and they're awesome. Potent PowerPC personal computers from IBM™ are on the way.

Computers powered by the chip on the left, it seems, are on the way out.

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The course of computing is hereby changed.

From waiting.

(Runs some software fast.)

To see the most obvious difference between computers powered by the PowerPC microprocessor and those based on the Intel® Pentium™ microprocessor, simply run a little software.

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Why are PowerPC computers so much faster? There are two primary reasons. First, the PowerPC microprocessor's advanced RISC technology features a higher performance floating point processor that accelerates software graphics performance. Since software is getting more graphical all the time, that's very important.

The PowerPC Microprocessor. *The RISC Chip.*

To working.

(Runs more software much faster.)

Second, major software companies are introducing new high-speed versions of their software to take full advantage of the PowerPC microprocessor's higher performance. (Interestingly, many haven't done the same for our competitor's microprocessor.)

One final note on software: PowerPC computers actually run more software than computers based on Pentium microprocessors. With PowerPC computers, you can run Macintosh, OS/2, MS-DOS, Windows, UNIX and, soon, Windows NT software.

So if you'd rather be working than waiting, work with PowerPC computers.

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The course of computing is hereby changed.

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The PowerPC Microprocessor. *The RISC Chip.*

(PowerPC microprocessors power the next generation.)

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As you can see, the PowerPC microprocessor isn't just about fast computers. It's fast becoming a way of life.

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The RISC Chip.

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PowerPC microprocessors from Motorola. The course of computing is hereby changed.

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Client/server systems

A good deal for Nordstrom's buyers

Windows NT merchandising system helps buyers monitor stock inventory

By Stuart J. Johnston
SEATTLE

Seattle-based clothing retailer Nordstrom, Inc. prides itself on a long history of high-quality goods, attention to detail and, above all, a near fanaticism for customer service.

It should come as no surprise then that the company's information services organization shows the same zeal for its own customers — the company's employees.

However, how far Nordstrom is willing to go to provide the information its employees need might be a surprise. Nordstrom's data processing department even deployed a Microsoft Corp. Windows NT Advanced Server client/server application two months before NT Advanced Server became commercially available.

Making a match

"Client/server more closely matches Nordstrom's corporate culture, which is decentralized," said Bob Hayes, manager of technology and architecture in the data processing department.

Nordstrom was casting around for an operating system for an end-user merchandising application it planned to develop called SKU Sales. A stock keeping unit, or SKU, is an identifier that indicates a stock item's style, color, size and vendor. By tracking which SKUs are selling and which are not, the buyer can improve stock purchasing and inventory management.

Improving buyers' effectiveness is a constant challenge in the cutthroat world of retail clothing, and at Nordstrom it is further complicated by the company's dealings with between 12,000 and 15,000 vendors each year.

The application uses Microsoft's Excel spreadsheet, customized with Visual Basic code to provide a front end to a SQL Server back-end database. It lets buyers in the company's stores pinpoint what is selling and what is not.

The Nordstrom team decided against several systems, including IBM's OS/2, because they were concerned about its ability to run Windows. The team wanted to use Windows for the buyers' workstations due to its ease of use. The team also had concerns that Novell, Inc.'s NetWare, which they were already running in-house, would not "be able to scale up to large networks," Hayes said.

Finally, the group met with representatives of Microsoft Consulting Services in October 1992. "One of them said, 'What about Windows NT?' and the room went silent," Hayes said.

After a three-day crash course on NT's benefits, Nordstrom decided to try it and chose Microsoft's SQL Server for NT as the database server.

The merchandising system uses an NT server at more than 50 store locations and corporate offices nationwide, and those tie into the databases servers at corporate headquarters. Current plans call for rolling the system out to more than 70 stores and corporate offices.

Buyers at each store use Windows for Workgroups 3.11 clients to access the database information for their own store through their local server. The local servers function basically as application, file and print servers, providing the security authentication for the SKU Sales system and passing log-in requests, according to Hayes.

Fitting the pattern

Nordstrom's merchandising application fits the pattern that Microsoft Consulting Services' Vice President Bob McDowell describes as the key area where NT Advanced Server has had its primary wins. It does not replace a legacy application but rather provides functionality that leverages user productivity using a client/server paradigm.

Nordstrom, *page 65*

Auditing servers the Preferred way

NetWare tool saves time, hassles for struggling LAN managers

By Elisabeth Horwitt

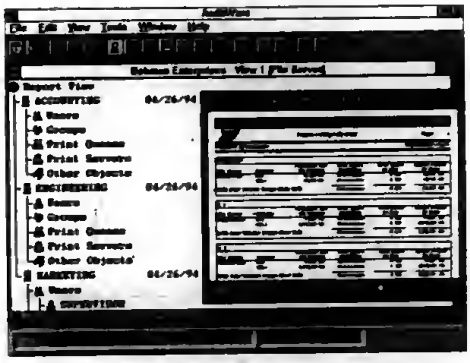
■ A NetWare auditing tool recently announced by Preferred Systems, Inc. in West Haven, Conn., promises to be a major time-saver for LAN managers — particularly those who are struggling to keep track of an extensive corporate supply of Novell, Inc. servers.

AuditWare fills a crying user need, user and analyst sources said. "Mainframe systems were easy to audit since no one could put one in a briefcase and walk out with it," said Jack Karp, president of Affinity Research Corp., a Greenwich, Conn., consultancy. However, "the emergence of personal computers, LANs and distributed computing has hidden a lot of [computing] assets" from systems managers who want to keep tabs on them for accounting and security purposes, he said.

The first of its kind

AuditWare is said to be the first Windows-based tool that allows the user to query a group of NetWare 2.x, 3.x and 4.x servers for information such as recent user log-on attempts, user access rights and the serial number and applications running on each. Other auditing tools such as Novell's NWAdmin offer similar capabilities, but only by logging on to one server at a time, Karp said.

When a corporate installation of hundreds of servers is involved, this can be extraordinarily time-consuming.



Preferred Systems' AuditWare *is said to be the first Windows-based NetWare tool that allows the user to query a group of NetWare servers for information*

"Right now, we have to log into each LAN, go into Pconsole and look at each server individually" to find out, for instance, which printers are connected to which servers, said Cheryl Grossman, senior technical analyst at Transamerica Financial Services in Los Angeles.

AuditWare is also said to support querying across multiple servers according to predefined criteria, such as which servers, disks or files are accessible by a user or group of users or how many times someone logged in with the wrong password on each server. With other auditing programs, the LAN administrator must run a security or usage report for each server and then manually extract and collate the data, Karp said.

Looking for consistency

In addition, AuditWare can check how a printer or user is named for each server and flag cases where two printers have the same name or one user has different names on different servers. This is particularly useful for organizations that are moving from the departmental, server-centric NetWare 3.x to the enterprise NetWare 4.x and need to have a consistent naming structure.

AuditWare features include the following:

- A Windows-based WYSIWYG custom report writer that handles exception reporting across the enterprise.
- More than 30 canned enterprise reports that can be used as is or as templates for custom reports.
- The ability to run reports off-line from a database to minimize network degradation.
- The same look and feel as NWAdmin.

AuditWare is priced at $595 per server. An IBM AS/400 version scheduled for third-quarter release will support querying across NetWare and AS/400 hosts, according to Preferred Systems.

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Connectivity Options				
Remote to LAN	Yes	Yes	Yes	Yes
Remote to Remote	Yes	No	No	No
LAN to Remote	Yes	No	No	Yes
LAN to LAN	Yes	No	No	Yes
Remote Connectivity Sync, ISDN, X.25 (In addition to ASYNC)	Yes	No	No	Yes
LAN Application Interfaces NetBIOS, NetBEUI, 802.2 (In addition to IP and IPX)	Yes	Yes	Yes	No
Security WS Addr., Sec. Admin., Logon Policies, Logon Day/Time (In addition to User ID, Password and Callback)	Yes	No	No	No

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Great Plains revs up Dynamics

By Ed Scannell

■ Just three months after the initial release of its Dynamics accounting package for Windows, Great Plains Software has followed up with a speedier version that improves financial reporting, posting and installation.

Version 2.0 of the 32-bit graphical package has enhanced General Ledger accounts numbers, and the number of segments has increased from five to 10, which allows more detailed financial reports to be produced.

The new version is, on average, 30% faster than Version 1.0, and installation time has been cut by 80%. Some observers said they believe these two improvements are the primary reasons the company released a follow-up only 90 days after the initial release.

The new release "was mostly for the performance gains; 30% represents a big difference. Another reason would be the large improvement to the installation procedure," said Jennifer Scholze, an accounting software analyst at International Data Corp. in Framingham, Mass.

Because Dynamics 2.0 is going largely to medium-size companies where the typical period to implement financial software is shorter, the quick update should not pose too large a problem.

"There does seem to be a lot of added features, but there is no indication that users especially needed the technical enhancements so quickly. We have been getting pretty good feedback from users about the product," Scholze said.

Speed drawback is gone

Bearing out analysts' claims, some users said they were particularly appreciative of Version 2.0's added speed and performance.

"The biggest drawback to [Version 1.0] was its speed, which is not surprising among most graphically based programs like this," said John Wilton, information systems manager at a large insurance company. "Its performance is much more acceptable now, which better shows off some of its features."

The latest version now makes available up to 54 fiscal periods per year, with up to two years open at any one time. This feature permits access to more detailed on-line transaction information.

Fiscal periods can also be closed selectively by series. For example, an accounting period can be closed for all Sales series modules, including Receivables Management and Invoicing, but left open for Financial series modules such as General Ledger.

"Many of these changes were made because of customer feedback," said Doug Burgam, president and chief executive officer of Great Plains. "We added some others so our users could take better advantage of what we see as increasingly open business environments."

On the client side, Dynamics 2.0 will initially work with Microsoft Corp's Windows, Windows for Workgroups, Windows NT and the Macintosh. By summer's end, it will run natively on Apple Computer, Inc.'s Power Macintosh, taking complete advantage of those systems' RISC chips, a spokesman said.

Version 2.0 also supports most popular network operating systems, including Novell, Inc.'s NetWare, Windows NT Advanced Server and Apple's AppleShare.

Pricing for Dynamics Release 2.0 modules range from $1,000 to $2,000. They are available now through the company's 3,000 value-added resellers.

New financial package

Separately, Great Plains announced it will ship its Dynamics C/S+ financial package [CW, Dec. 6, 1993] aimed at companies migrating their mission-critical accounting applications from mainframes to client/server configurations.

The package, which can be scaled above PCs to be used with RISC-based Unix servers, offers users SQL connectivity and open access to data through its Open Database Connectivity drivers.

Dynamics C/S+, which runs Windows NT on Intel Corp. and Digital Equipment Corp. Alpha servers and on the Power Macintosh operating system, will ship with 13 applications. Seven of those are financial and six are development tools.

Individual modules range in price from $5,000 to $40,000.

Unix workstations

New machines designed to keep HP ahead

By Jean S. Bozman

Hewlett-Packard Co. last week announced midrange Unix workstations that industry analysts said are aimed at keeping HP ahead of Sun Microsystems, Inc.'s new SPARCstation 20 in price/performance.

HP's introduction coincided with the InterWorks meeting of HP workstation users in Orlando, Fla. Four new HP machines — three HP 9000 Model 715s and one Model 725 — are based on the new PA-RISC 7100 LC hi-endian chip that powers the low-end Model 712. Sun made its announcement in late March, and users are beginning to install SPARCstation 20s [CW, May 16]. IBM is also expected to announce midrange workstations this week.

Users said they look forward to the new HP workstations boosting the performance of the technical applications that run on current Model 715 machines.

"I like the speed," said Dave Dixon, an application analyst at Denver International Airport's facility management group, which has eight HP workstations, including three Model 715s. "The HP products are very fast, and for the applications we're interested in, that's very important." Dixon's group uses computer-aided design and graphics software to create maps of engineering, environmental and electrical systems.

Market crossover

Industry analysts said HP is catering to its technical users with the midrange workstations — after using a January announcement of the low-end HP 9000 Model 712 to address a crossover commercial desktop market that includes high-end Intel Corp. Pentium-based PCs [CW, Jan. 24].

"This shores up their traditional workstation business, which is still where 75% of all workstations are being sold," said Nancy Battey, the director of workstation research at International Data Corp. in Mountain View, Calif. HP's workstation business grew 15% last year, but the firm is still running second to Sun in terms of unit shipments in workstations, she said.

The use of the 7100 LC RISC chip, which is cheap to manufacture, will help keep overall system prices down, Battey said. Its hi-endian design also leaves the door open to support Microsoft Corp.'s Windows NT if HP later decides to do so. "NT still hasn't taken off, so I can understand why they haven't taken a stance on it," Battey said. "But they're prepared if they need to go that route."

To accompany the workstations, HP also announced four graphical accelerators, priced from $2,500 to $7,000. Two of the add-on accelerators support 8-bit graphics and two support 24-bit graphics, said Pierre Bouchard, a product marketing manager at HP's Workstation Systems Group in Chelmsford, Mass.

"Graphical accelerators are near and dear to the hearts of engineers because we will suck up all the available graphics resource for our applications," said Doug Eltoft, president of the InterWorks, Inc. user group and director of operations for the computer network at the University of Iowa's engineering college in Iowa City.

What HP is offering with its new Unix workstations

Workstation	SPECint92/ SPECfp92	Available	Price
HP 715 64 MHz	67/97	Now	$9,995
HP 715 80 MHz	84/121	Now	$13,600
HP 715 100 MHz	100/137	Now	$19,005
HP 725 100 MHz	100/137	Third quarter	Not available

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Good deal for Nordstrom buyers

CONTINUED FROM PAGE 61

After a proof of concept prototype was successful, Nordstrom had SKU Sales up and running in production mode "two months before NT shipped," said Charles Mitchell, Nordstrom's data processing manager.

In fact, NT shipped in mid-August 1993 and "by Sept. 1, we had 20 NT servers up," said David Porter, lead in Nordstrom's client/server support group.

"By December 1993, we were fully rolled out to our intended audience [and] we're very pleased with what we're hearing, although the jury's not completely in yet," said David Benton, systems services manager in data processing. "In one case, during installation, the buyer looked over at a screen that just had been brought up and immediately was on the phone changing an order," Benton said.

Changing the technology

Because the buyers are not generally technologically sophisticated, ease of use was a major design criteria for the client end of the system, and the Nordstrom team feels they have achieved a world-class application in that category.

"Rather than [forcing users to] change to suit the technology as in the mainframe applications of the past, we were able to change the technology to meet them," said Gordon Ridgeway Jr., Nordstrom's manager of data resource management.

Performance was another design goal. "We want on-line transaction processing response times from what is essentially a decision-support system," Ridgeway said.

"Eighty percent of all queries [return data] in under 10 seconds," Benton said.

That is fairly impressive performance considering that the main database, even at this early stage, has already grown to approximately 80 million rows and holds 60G to 70G bytes of data, Benton said. Point-of-sale data is acquired from an IBM IMS database running on an IBM mainframe that gathers the information from in-store cash registers.

And the database continues to grow. Current projections are that it will swell to about 200G bytes before it is fully populated.

So the next time you go shopping at Nordstrom, realize that while the store itself is oriented to help customers get the clothes they want, somewhere close by is a buyer intently studying a screen that shows the latest sales figures and trying to predict what you will want.

What's in the store

In order to run its massive application, Nordstrom uses 14 dual-processor, Intel Corp. Pentium machines with 256M bytes of RAM to process the database. Communications are via Microsoft's Windows NT built-in LAN Manager networking.

Roughly 400 of the company's 500 to 900 store buyers are currently using the SKU Sales system to help them purchase women's ready-to-wear clothing.

Local servers at the stores are about half dual-Pentium machines and half 66-MHz Intel I486/DX2 PCs. Both types of local servers have 64M bytes of RAM while client machines are 33-MHz 486/DX2s, each with 16M bytes of RAM.

—Stuart J. Johnston

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Novell/Xerox seek easier document access

By Lynda Radosevich

Novell, Inc. and Xerox Corp. said their recently announced partnership will yield products and services that ease the task nf finding and sharing electronic documents over corporate networks.

The partnership was announced at Networld/Interop '94 this month. The companies will develop a software framework on which developers can build document management services and applications. So far, nnly SoftSolutions Technology Corp., a document management company owned by WordPerfect Corp., and XSoft, which is owned by Xerox, have committed to developing to the framework.

Called Document Enabled Networking (DEN) for Novell NetWare, the framework is meant to permit NetWare 4.x users to access electronic documents regardless of where they are stored or what application they were created in. Availability is targeted for the second quarter of 1995.

Upgrade appeal

For users who are deciding when to upgrade tn NetWare 4.x, this should increase its appeal, said James M. Popkin, program director of offiee information systems at Gartner Group, Inc. in Stamford, Conn.

At NetWare 3.x shop Keyport Life Insurance Co. in Boston, integrated document management "is nnt a deciding factor but could be one of many considerations in moving from NetWare 3.12 to 4.0," said Eric Olson, manager nf network services and operations.

Document management can help organizations nse and manage infnrmation that is currently isolated. For example, an aerospace company end user could use an applicatinn written to DEN to find out all activities in the organization related to a particular airplane. The application could return document titles from the legal, engineering, accounting and marketing departments, even though each department uses a different document management solution. The user could then access the documents, subject to appropriate security clearance.

DEN will run as a set of NetWare Loadable Modules with application programming interfaces to front-end applications and Service Provider Interfaces to backend services such as directories. It will also provide development tools and new document-access and management services.

Also, the companies said they will extend the services to include Unix, UnixWare and later, OS/2 and Windows NT.

Although Novell and Xerox intend for DEN to become a standard piece of middleware, it is unclear how DEN will work with specifications proposed by the Shamrock Coalition, a group of vendors and users working on document management standards.

Changes of note

One platform that companies are using for document management functions is Lotus Development Corp.'s Notes. Recent announcements enhancing Notes' document management capabilities include the following:

- Adobe Systems, Inc. announced Adobe Acrobat software that should let Notes users distribute documents created in any application. Adobe Acrobat will support Notes Field Exchange, which enhances Notes users' search, view, modify and print capabilities.
- No Hands Software, Inc. shipped a new version nf Common Ground for Windows that is integrated with Notes. The electronic document distribution software lets users send formatted documents that recipients can view and print regardless of whether they have the same application, computer or fonts nsed to author them.

—*Lynda Radosevich*

d R E A M

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IPL Systems, Inc. has unveiled ESP-Minitower (ESP-MT), a high-performance disk storage tool for IBM RISC System/6000 and Novell, Inc. NetWare servers.

According to the Maynard, Mass., company, ESP-MT is available in one- to seven-drive configurations, offering between 2G and 14G bytes of storage in a single deskside enclosure.

The product can be configured with a differential or single-ended interface, and an optional customer-replaceable tape subsystem can be integrated into ESP-MT for unattended backup and restore capabilities. All ESP-MT units are delivered with hardware preconfigured to user specifications.

ESP-MT prices start at $9,100.

▶ *IPL Systems*
(508) 461-1000

SIO Technology, Inc. has introduced SIO FT-500, a Unix laptop.

According to the New York company, SIO FT-500 weighs 6½ pounds and offers a 9½-in. thin film transistor (TFT) active-matrix color screen, a 32-bit VL bus and a VGA graphics subsystem with 1M byte of video RAM.

The notebook offers 8M to 20M bytes of RAM and the choice of 340M- to 520M-byte removable hard drives.

Two Type II PCMCIA card slots with full Unix support and a one-card, portable docking station provide expandability, network accessibility and custom application flexibility.

Eight-bit sound provides multimedia and voice-mail capabilities.

Prices start at $3,850 for a monochrome system and $6,300 for a TFT active-matrix color system.

▶ *SIO Technology*
(212) 473-6910

Emulex Corp. has announced RS-232 and RS-422, two daughtercards.

According to the Costa Mesa, Calif., company, the products were designed for the company's line of DCP-286 and DCP-386 intelligent wide-area network adapters, enabling PCs to support eight full-duplex direct memory access ports at 64K bit/sec. data transfer speeds.

The products feature an RS-530- and X.21-compliant interface and can be used in applications including financial services, retail point-of-sale, airline reservation systems and international banking.

Prices for DCP-286 start at $1,995; DCP-386 starts at $2,395.

▶ *Emulex*
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Strategic Mapping, Inc. has introduced Atlas GIS for Windows 2.0, desktop mapping software.

According to the Santa Clara, Calif., company, the product provides built-in SQL connectivity for users in client/server and workgroup computing environments.

Atlas GIS for Windows 2.0 offers multiple map insets, a customization tool kit based on Microsoft Corp.'s Visual Basic and advanced geographic analysis capabilities including complex "donut" buffering and the ability to assign data from one feature or layer to another.

The product also offers advanced geographic analysis, extensive presentation tools and a built-in database.

Atlas GIS for Windows 2.0 costs $1,595. LAN Paks are available for $3,595 for three users and $8,995 for 10 users.

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Nature Conservancy opts for electronic fund-raising

Organization practices what it preaches by conserving money, paper via automated payment option

By Gary H. Anthes
ARLINGTON, VA

The Nature Conservancy has a special interest in protecting trees. Therefore, the opportunity to save paper made its move to an automated collection system for contributions a natural.

The conservancy uses the Automated Clearing House (ACH) Network to collect $40,000 a month from 3,000 donors. Richard Thomas, manager of renewal, retention and sustainer programs, said the computer- and network-assisted collection method has boosted retention rates, increased contributions, improved cash management, improved member relations and lowered administrative and mailing costs, in addition to saving paper.

The Nature Conservancy, *which preserves areas like this one in Colorado, has started collecting contributions via network*

It also recently earned the conservancy the annual Payment Systems Excellence Award from the National Automated Clearing House Association, a trade association that promotes and sets rules for use of the ACH Network, which is jointly run by the Federal Reserve and other parties.

About 7,500 of the conservancy's 745,000 members are "sustainer" members — those who have pledged to contribute monthly. Those who opt for electronic payment send in an agreement form and a check, from which the payer's magnetic ink character-recognition number is extracted. These are copied and sent to a service bureau for processing.

On the 19th of each month, the service bureau sends the payments file electronically to the conservancy's local bank. The next day, member account balances all over the country are debited via the ACH Network and the conservancy's bank balance is credited a corresponding amount.

Saving money

Thomas said the conservancy pays the service bureau 40 cents per transaction or payment and the bank 10 cents per transaction. But that is less than the conservancy pays to process the billing and collecting from the monthly donors who pay the old-fashioned way: 92 cents per transaction.

Thomas said the automatic payment option is more likely to ensure recurring contributions because, unlike members paying by check, automatic donors must take action to end their contributions, not action to make them. He said with direct payment, retention rates run 91% for the second year and 84% for the third year. By contrast, those writing checks renew at a 70% rate, on average.

"Once you get someone to pledge monthly, the problem is collecting that pledge," said Beverly Kempf, president of Ceres Corp., the conservancy's service bureau in Bethesda, Md. "If you can get the member to preauthorize the debit, it happens every month. It's about as guaranteed as [pledge] fulfillment can get."

Thomas said studies have shown that about 5% of a nonprofit organization's membership typically consists of those making monthly contributions, and of those, 40% elect automated payment.

Although relatively few elect the automated option, that number is growing, Thomas said. "With people getting more familiar with electronic things such as electronic shopping and electronic mail, usage will go up."

The electronic route

Nonprofit organizations including the MIT Alumni Fund, Planned Parenthood Federation of America, The Sierra Club, the WGBH public radio and TV stations in Boston and Ohio State University have turned to electronic means for fund-raising and membership drives.

Source: National Automated Clearing House Association, Herndon, Va.

Mitch Betts

The sewer pipes of cyberspace

The city of Milpitas, Calif., is demanding more than $1 million in fees to let Pacific Bell dig trenches and lay cable for its segment of the "information superhighway." This is newsworthy because City Hall could put a real crimp in cyberveep Al Gore's plans for a National Information Infrastructure. But it is not surprising.

After all, installing the information highway is no different than building bridges, pouring asphalt or laying sewer pipes. To think that the info-structure will be no more than a pristine laser beam, with no mess or red tape, is just naive.

While the press and companies such as Pacific Bell focus on the promise of interactive services such as video-on-demand and home shopping, the view from City Hall is a bit different.

As the *San Jose Mercury News* recently reported, Milpitas officials foresee open trenches along 60 miles of streets, a four-month traffic nightmare and broken water mains. The city is holding up approval of the necessary digging permits until it gets what it wants: money to hire more city inspectors, a government access channel and a "developer's fee" to cover the city's overhead costs.

The Milpitas story is a reminder that the info highway is subject to the same political hassles that other infrastructure projects face. Unions, local merchants and interest groups of all stripes will have their say.

As usual, there will be a hodgepodge of different federal, state and local regulations, too. The Illinois Supreme Court has already ruled that municipalities cannot collect fees for installing fiber-optic cables under their streets.

Furthermore, it is safe to predict that deals will be struck for rights-of-way, people who do not want to move out of the way, and NIMBYs, people who vow "not in my backyard." Backhoes will slice cables. Info road crews will lean on their shovels.

Like the highway and telephone before it, the National Information Infrastructure will also be a conduit for sex, advertising, fraud, political campaigns and every other form of enterprise. There will be billing disputes, rate increases to pay for repairs and upgrades and regulatory commissions to deal with it all.

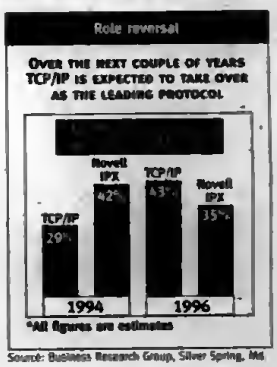
How can I make such fearless predictions? Forecasts about ever-changing technology are usually wrong, but here we're talking about the politics of infrastructure. And they have not changed for hundreds of years.

Betts is *Computerworld*'s national correspondent, based in Washington.

TCP/IP to become leading protocol

By Elisabeth Horwitt

While TCP/IP is still far from the ideal network transport standard that network managers are waiting for, several recent product announcements promise to make life easier for companies that are making TCP/IP the basis for their LAN and wide-area network installations.



Source: Business Research Group, Silver Spring, Md.

"TCP/IP is effectively the lowest common denominator" for networking, said Andy Palms, manager of campus computing sites at the University of Michigan. This is becoming even more the case as the client/server giants, including Novell, Inc., Banyan Systems, Inc., Microsoft Corp. and Apple Computer, Inc., throw their weight behind the de facto networking standard [CW, May 9].

While many of those vendors have provided some level of TCP/IP support in the past, upcoming implementations are

TCI/IP, *page 73*

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SynOptics' Schmidt reflects on networking industry

Computerworld recently talked with Ronald V. Schmidt, SynOptics Communications, Inc.'s senior vice president and chief technical officer and one of the fathers of Ethernet. Although Schmidt rarely grants interviews, he chatted with CW staff writer Stephen P. Klett Jr. about the state of the networking industry and the future of high-speed networking technologies such as Asynchronous Transfer Mode (ATM), "fast" (100M bit/sec.) Ethernet and Ethernet switching.

CW: The market has become crowded lately with several hub, router and switching vendors coming out with similar product lines and strategies. What is your advice for users struggling to choose one strategy to follow?

Schmidt: Stick with architectures that allow you to preserve the way you're doing things without requiring wholesale change in the way you use technology. Is it open? Is it standard? Does it offer cost/performance benefit?

We're all going to be doing fancy things with the network and data link layers. We're all going to implement it in different ways, but will it have the same functionality? Yes. Users should then look at performance and complexity. It should all shake out in about a year. Until then, go out and kick a few tires and try out a few prototypes.

CW: What are the obstacles facing widespread adoption of ATM?

Schmidt: There's clearly room for cost reductions going forward, but I don't think price is an obstacle for appropriate applications. ATM in '93 is at the price levels of Ethernet in '83; actually, it's cheaper. But it's not for word processing at the desktop. There are two standards you need to go forward: signaling and LAN emulation. Those are well-enough defined now that you can build networks. We've just got to get comfortable with it by doing the early implementations to validate that it works to get the confidence to put it into the production networks.

SynOptics' Ronald V. Schmidt: *'If you look at ATM and switched Ethernet now, ATM is clearly very scalable'*

CW: Why would a user buy ATM when he can buy switched Ethernet and connect some users at 10M and 100M bit/sec. without having to make drastic equipment changes?

Schmidt: If you look at ATM and switched Ethernet now, ATM is clearly very scalable. All the congestion management and class-of-service things that are inherent in the ATM standard are really good and will be used over time. 10M and 100M bit/sec. Ethernet switching offers you ways to get increased performance very cheaply while protecting your installed base. So it gives you a way to get ATM-like services right now, but it doesn't have the inherent structure in it to do everything ATM will. Eventually, because of the way it's defined, my feelings are there will be a limit to Ethernet's long-term evolution. But that's not to say that its use will be diminished.

CW: What effect will switching deployment have on the role routers play in tomorrow's internetwork?

Schmidt: We can more cost-effectively replace the router application of microsegmentation and traffic management with switching. We can do the same things with switches cheaper. We're not trying to replace routers with switches; we're keeping the router architecture in the network the same. It's just that we're finding a better way to do the traffic management function that routers are being used for in collapsed backbones. For $500 per port, you can use a switch to do what a router does for $2,000 to $4,000 per port. You still need routers for firewalls and security functions — you just need fewer ports.

CW: What areas of Ethernet switching need the most work?

Schmidt: There's a lot of management work we still have to do. Once you start tying virtual networks into hubs, you can start optimizing the network for automatic moves and changes. We all need to figure out how to do this. And then how do you support lower-cost cabling? We're just getting started.

I believe putting switching into LANs now is going to allow us to automate the things that are complex now for users, give people more information, hopefully lower the management labor content and the level of intellectual skills to run large networks.

TCP/IP

CONTINUED FROM PAGE 69

expected to be much more efficient and standardized. For example, Microsoft is providing access to 32-bit device drivers for TCP/IP through its Virtual Device Driver, or Vxd, interface, according to J. Allard, Microsoft's program manager of TCP/IP technology.

The earlier Dynamic Link Libraries implementation used 16-bit code and was subject to interruptions from other programs running on the workstation, Allard said. A streamlined 32-bit version of TCP/IP will support the Vxd interface on the Daytona version of Windows NT, the Chicago version of Windows and an upcoming Windows for Workgroups release, he added.

Ipswitch, Inc. and FTP Software, Inc. both recently announced Vxd versions of their TCP/IP software for Windows. Other TCP/IP software vendors are expected to follow suit, Allard said.

Apple, meanwhile, has promised to provide native TCP/IP support in the next release of its Macintosh operating system, the company said in a recent press release.

Apple is also working on the Open Transport communications architecture, which will allow developers to write a single application to run over a mixture of underlying transports, including TCP/IP.

Another promising development is growing support for Dynamic Host Configuration Protocol (DHCP). This is a recently released Internet Engineering Task Force specification that allows a server to automatically allocate TCP/IP addresses to PCs. Without such a server, network administrators spend approximately 20 minutes each time a PC needs a new TCP/IP address, which is often, given the frequency with which employees move about in large corporations.

"As you move into PC LANs, configuration management, dealing with subnet maps and addresses is a bear," said David Passmore, president of Herndon, Va., consultancy Decisis, Inc. The LAN administration burden that TCP/IP imposes and that DHCP addresses "has been holding back widespread acceptance of TCP/IP on the LAN and PC," he added.

DHCP to make life a little easier

DHCP, a recently released specification, promises to make life a little easier for configuration management on TCP/IP networks. Among the recent DHCP announcements were the following:

- Sun Microsystems, Inc.'s SunSoft unit has licensed Competitive Automation's DHCP client for the Solaris platform. SunSelect also recently announced a DHCP server.
- Microsoft will provide a DHCP client on its Chicago/Windows and Daytona/Windows NT releases, as well as a DHCP server to administer TCP/IP addresses on those systems, company spokesman said recently.
- FTP Software in North Andover, Mass., recently announced OnNet Software, which includes a 32-bit, Vxd-based TCP/IP stack and DHCP-based client and server software that is said to configure a PC for TCP/IP communications in five minutes. The server package includes Network File System and File Transfer Protocol. The software is scheduled for availability in 90 days, priced at $450.

Lotus revamps CC:Mail pricing

By Lynda Radosevich

Lotus Development Corp. has moved to a per-user pricing model for its CC:Mail electronic messaging line, pulling the plug on a complicated pricing model that charged separate fees for desktop, server and interserver software.

The company has also removed from the server software a counter that monitored the number of users, according to Priyaranjan Sinha, a CC:Mail senior product marketing manager.

Taking out complexity

The move is not expected to change customer costs or improve Lotus' revenue, a Lotus spokesman said. Rather, it is intended to take out some of the complexity in pricing CC:Mail networks and bring CC:Mail pricing in line with Lotus' Passport.

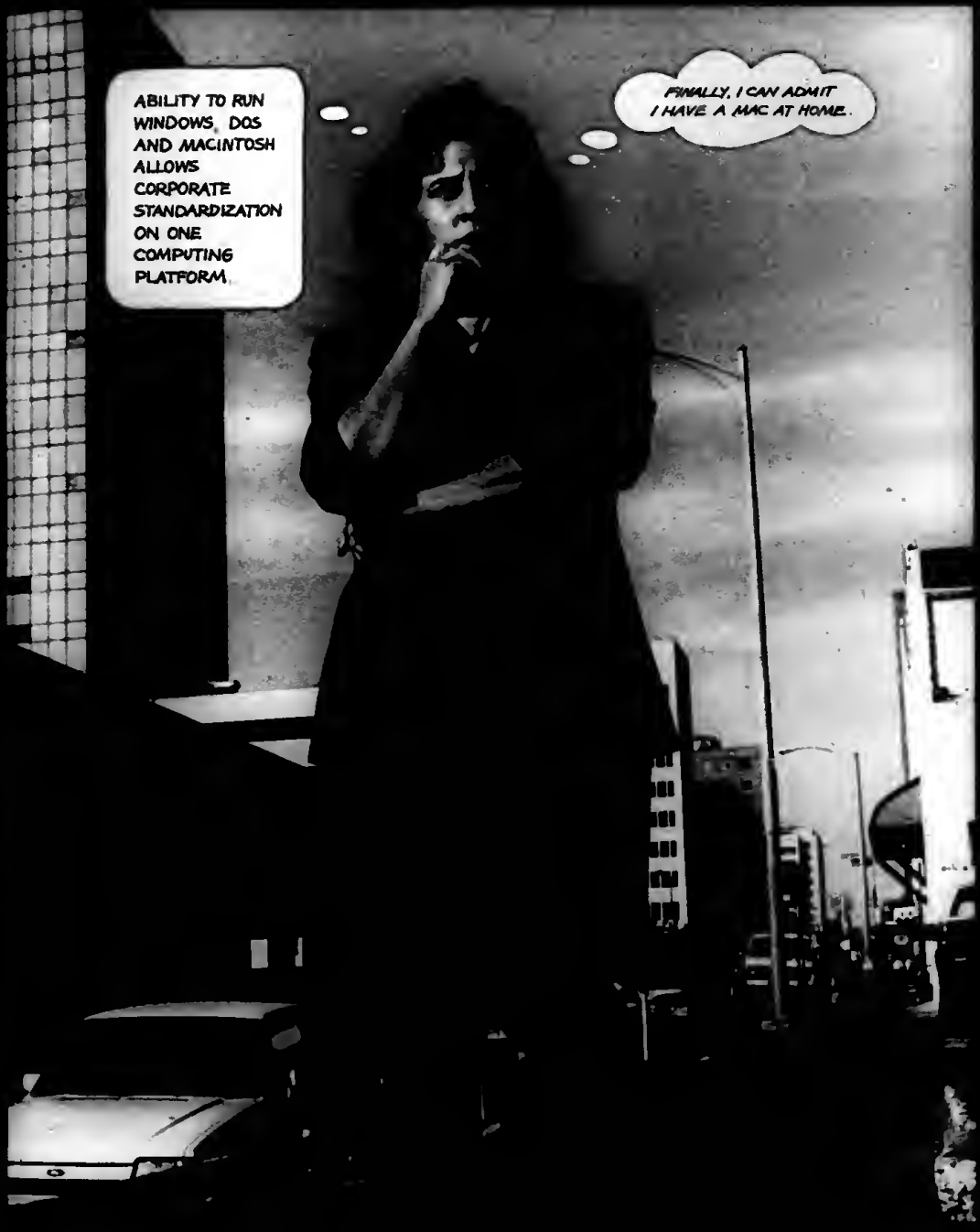
Passport is Lotus' recent initiative to let decentralized customers earn volume discounts. Passport customers receive an identification number, and Lotus resellers use a worldwide Notes-based system to track their purchases, much like a frequent flier program. This permits organizations with distributed buyers to earn group pricing discounts, Sinha said.

It also allows Lotus to move all of its sales functions to resellers, even for its largest accounts.

"With Passport, Lotus has gotten out of the business of quoting prices and distributing products," Sinha said. However, the Lotus sales force will still retain strategic relations with large customers to brief them on product directions and such, he said.

The Passport system resembles Microsoft Corp.'s Select corporate licensing program, which was launched in January, said Craig Fiebig, director of organizational licensing at Microsoft.

However, Microsoft Mail pricing still lacks consistency: Sometimes Microsoft charges for the client, but often it is free. To alleviate inconsistencies, Microsoft is reviewing pricing for Mail and other server products, Fiebig said.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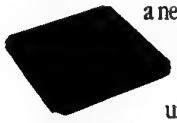

The PowerPC 601 has a lot of power inside it, the combined resources of IBM, Motorola and Apple.

The RISC technology of Power Macintosh brings a whole new level of performance to personal computing. Software written to take advantage of its unique new capabilities, in fact, will run significantly faster than the same programs written for 486 or Pentium processor-based PCs.

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This is just the most recent example of Apple's commitment to making it easier for MS-DOS and Windows users to take advantage of Macintosh innovations.

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These days, the whole personal computer industry is buzzing about the potential of RISC processor technology in PCs.

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From left: the new Power Macintosh 8100/80, Power Macintosh 7100/66 and Power Macintosh 6100/60

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ATM test set for Western Europe

By Elizabeth de Bony
BRUSSELS

This summer, vendors in Western Europe will test a pan-European, high-speed Asynchronous Transfer Mode (ATM) network to see if the technology can provide full broadband services such as videoconferencing and interactive video.

The test signifies that "we are entering the multimedia age with the complete range of industrial applications," said a European Commission official who asked not to be named. ATM technology will permit the high-speed transmission of images along with data and voice over the same telecommunications network.

A trial run

The trial will run from July 1 through June 1995 and will involve all the telecom operators in Western Europe, which include the 12 member states of the European Union and the six countries of the European Free Trade Association.

Also participating in the test will be at least 100 potential users of broadband services such as hospitals, fashion designers, universities and car manufacturers.

ATM will permit three-dimensional vision so that a fashion designer in Lisbon will be able to participate directly by creating a dress on screen in Milan. Or a French control center located in Strasbourg will be able to control the movements of robots in a factory in Karlsruhe, Germany, according to the European Commission official.

The U.S. has held similar trials involving "multigigabit test beds, but the tests only focused on the technology," the official said. The advantage in Europe is that "tests will involve both the technology and the services," he said.

Since March 1, the European Union's telecom operators — the former state monopolies of telecom equipment and services — have been testing the technology to ensure that when users hook up to the system on July 1 the necessary infrastructure and networks will be operational.

Much of the technology has been developed over the years as part of the European Union's research and development program in advanced communications. Alcatel Alsthom and Siemens are providing the equipment, the Commission official said.

De Bony is a Brussels correspondent for the IDG News Service.

Mobile networks to hit Asia

By Torsten Busse
MUNICH

Companies in China and the Philippines will soon be able to communicate via mobile phone.

The public communications network unit of Siemens AG, based here, said it closed a contract with Isla Communications of Manila to build a nationwide digital mobile telephone network in the Philippines. Siemens and Nokia Telecommunications also announced deals in China.

The Siemens Philippines network will be based on the Global System for Mobile Communications (GSM) standard. Installation of the network will begin this month, a Siemens spokesman said. Isla Communications is one of seven private carriers licensed by the Philippine government, Siemens said.

Beginning with metropolitan Manila and the city of Cebu, the digital network will be installed in several phases. By the end of the year, Siemens and Isla Communications expect to serve more than 150,000 subscribers, according to a Siemens spokesman.

Last week, the Bejing Telecommunications Administration ordered enough electronic digital switching systems from Siemens to serve a total of 560,000 phones and equip 17 switching stations. Financial details of the contracts were not disclosed.

For its part, Nokia Telecommunications GmbH of Duesseldorf last Friday also announced a contract with the Bejing Telecommunications Administration.

Nokia Telecommunications, part of the Finnish concern Nokia, headquartered in Helsinki, said it will install a digital mobile phone network for 10,000 users in the city of Bejing this year. The initial plan calls for the installation of Nokia's DX 200 digital switching system. Like Siemens, it supports the GSM standard.

Other projects

Nokia Telecommunications will also deliver cellular telephones, network operations and network management systems to Bejing. The company will eventually offer end-user services such as voice mail, Nokia said.

The company expects additional orders for telecommunications equipment from the Bejing government, a Nokia spokeswoman said.

Busse is a Munich correspondent for the IDG News Service.

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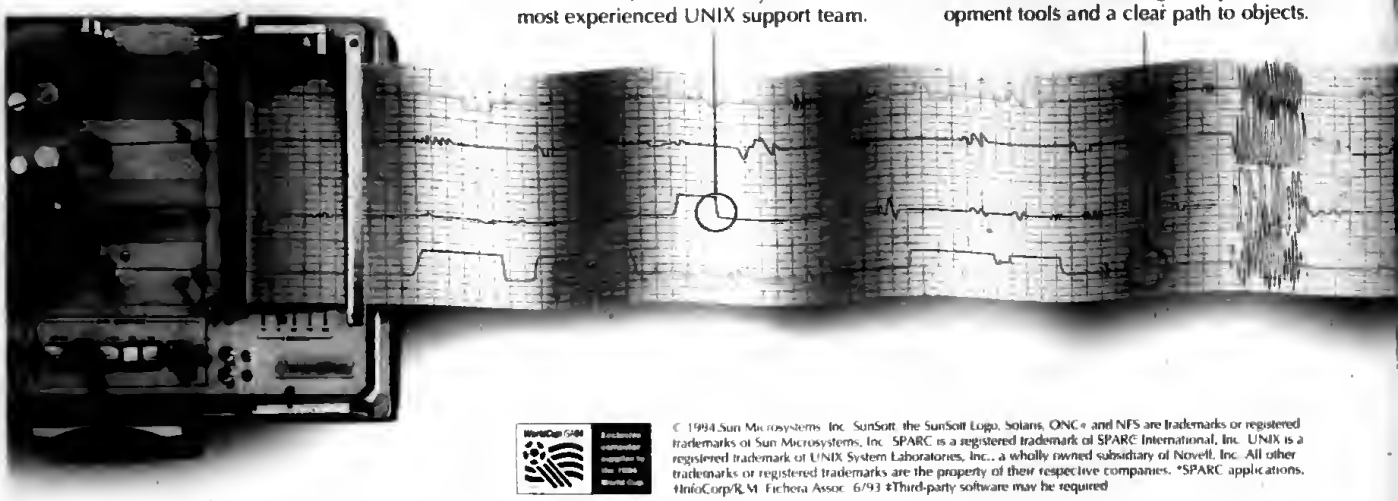

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Beowulf prowls the Internet through library project

By Elizabeth Heichler
LONDON

If you would like to examine a 1,000-year-old copy of *Beowulf* but can't make it to London, the British Library will now bring the manuscript to you — over the Internet.

Through its "Initiatives for Access" program launched this spring, the institution is exploring ways to increase visibility of the treasures in its collection by putting them on the global network, while also setting up on-line access to its huge cataloging system. The British Library contains 18 million volumes and 150 million separate items including papyrus rolls, stamps, maps, manuscripts, books, records and CD-ROMs. They cover every period in human history, every country and every known language.

Now testing

Test images from the library's unique manuscript of the Old English poem *Beowulf* are now available over the Internet, and an electronic facsimile of the entire work is currently being produced by two American Anglo-Saxon experts — Kevin Kiernan at the University of Kentucky and Paul Szarmach at the University of New York at Binghamton.

The text of the poem recounting the hero Beowulf's battles with the monster Grendel and its mother — and his final mortal wounding by a dragon — is known only from the library's 11th-century manuscript.

Scholars can now gain more information from looking at the images electronically than they have been able to from handling the work itself, Kiernan said. The photographic techniques used to create the images are revealing parts of the text that had been obscured by fire damage in 1731 and by a 19th-century restoration attempt.

The manuscript is being photographed page by page at high resolution under different types of light. The digitized images also show microscopic details such as the hair follicle patterns of the skin on which the text was written. Researchers can use image processing techniques to clarify what appears on the page.

The rich images of the *Beowulf* manuscript take up large chunks of memory. Very high-resolution images can consume up to 21M bytes, Kiernan said, which makes them difficult for some people to download.

The rich images of the Beowulf manuscript take up large chunks of memory.

"Very few people have been able to use the 21M-byte files, so I've compressed them into JPEG and GIF [format files] so they're small enough for people to use," he said. Kiernan uses a Hewlett-Packard Co./Apollo Computer workstation with 24-bit color, so the images are "absolutely stunning," he said.

Additional literary and artistic treasures in the library's collection due for digitization include the Magna Carta, the Lindisfarne Gospels, the Leonardo da Vinci Sketchbooks, the Sforza Hours and the Diamond Sutra.

More accessibility

Another thrust of Initiatives for Access has been making the British Library's On-line Public Access Catalog (OPAC) system available on JANET (the UK's Joint Academic Network, which is part of the Internet). Network OPAC contains 6 million records corresponding to the library's catalogs of science, humanities and music held in London. Users can search the system not only in English, but also in Greek or Hebrew.

The on-line catalog was originally developed for use in the library's reading rooms, where it has run since September 1993. The user interface has proved popular, according to a library spokesman. So for those who wish to use it over the Internet, the institution will provide its own Windows-based client software.

Access to Network OPAC is currently limited to users with a JANET connection rather than the entire Internet community because the service is only a prototype, explained Jan Ashton at the library's National Bibliographic Service. However, Network OPAC will become more widely available over the Internet in its second year, she added.

Currently, both the client software and access are free, and there has been no decision about whether there should be a charge for either, Ashton said. "During this year we're doing market research, a bit of user analysis to see how they are using it and what additional services they might want," she said.

The test images from *Beowulf* are available (for personal use only) over the Internet by anonymous file transfer protocol from the London server othello.bl.uk in the directory sys/pub/mss/beowulf, and from the Kentucky server beowulf.engl.uky.edu in the directory ftp/pub/beowulf.

Heichler is a European correspondent for the IDG News Service.

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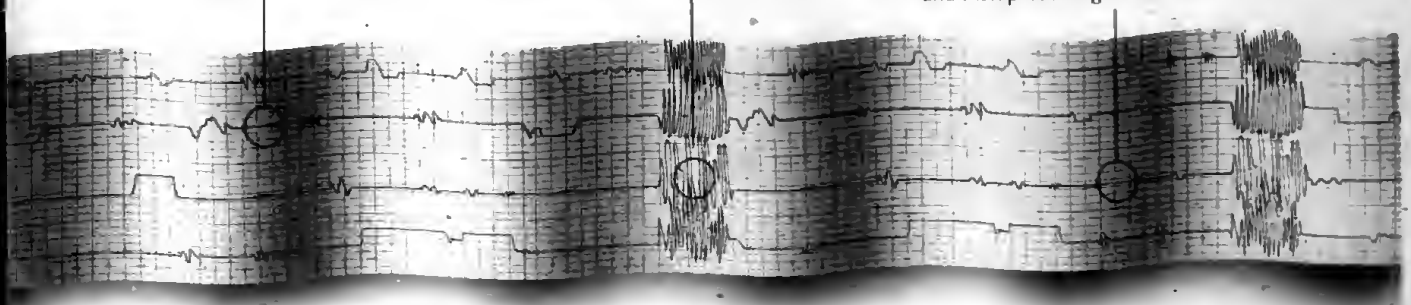

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Extended Systems has announced the ExtendHub ESI-4216A, a 10Base-T hub with built-in support for four Novell, Inc. print servers.

According to the Boise, Idaho, company, the product allows LAN administrators to connect up to 16 PCs and four printers directly to an Ethernet network.

Advanced management controls for both the hub and the print servers are supported.

Features include a network printer management utility and flash memory.

ExtendHub also provides 16 dedicated unshielded, twisted-pair (10Base-T) ports and an additional port (attachment unit interface or baby "N" connector) to allow users to connect ExtendHub to other hubs, a file server or the network backbone.

The product costs $1,295.

▶ *Extended Systems*
(208) 322-7575

Dayna Communications, Inc. has introduced the DaynaStar Stack-12 and Stack-24, two 10Base-T Ethernet hubs.

According to the Salt Lake City company, the products are 12- to 24-port hubs that can accommodate network growth.

As many as four hubs can be stacked together to provide up to 104 ports in a single "virtual hub" stack without adding hops to the network.

The DaynaStar Stack-12 and Stack-24 enable users to slide Simple Network Management Protocol management modules and attachment unit interface, baby "N" connector or fiber-optic transceiver modules into slots in the back of the hub.

The Stack-12 and Stack-24 cost $849 and $1,499, respectively.

▶ *Dayna Communications*
(801) 269-7200

U.S. Robotics, Inc. has introduced the Total Control Enterprise Network Hub.

According to the Skokie, Ill., company, the chassis has six slots and can support multiple protocols and interfaces for branch offices and distributed networks.

Typical applications for the Enterprise Network Hub include modem pooling, remote access and Internet access.

The six-slot chassis can be used with any current Total Control modem and gateway cards, including Token Ring, Ethernet, quad modem cards, X.25 interfaces, T1 and fractional T1 devices and LAN Access Server cards.

Prices start at $599.

▶ *U.S. Robotics*
(708) 982-5010

Computer Network Technology Corp. has introduced the ChanneLink SCSI Gateway, a product that accepts Unix tape-handling commands from SCSI hosts and converts them to channel protocols consistent with standard IBM Model 3480/3490 tape drives.

According to the Minneapolis company, the product then moves the data over a LAN and/or wide-area network to the tape controller and presents it over the normal IBM channel.

ChanneLink also translates responses such as device status from the tape controller back to the physical interface and channel protocol of the original host allowing the two to interact as if they were a native connection.

Pricing for the ChanneLink starts at $29,000.

▶ *Computer Network Technology*
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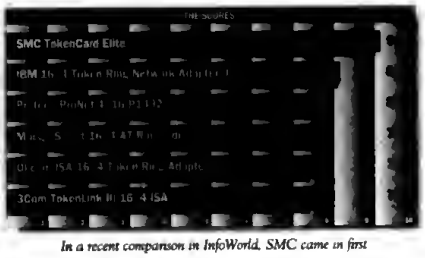
There's a new leader in Token-Ring Technology.

In June 1993, InfoWorld tested the top Token-Ring adapters for speed and flexibility. Guess who came out on top?

Not IBM, Madge or Olicom. But SMC. The review stated: "Not only did the



In a recent comparison in InfoWorld, SMC came in first

SMC TokenCard Elite™ offer overall excellence (with excellent or very good scores in every category), it stood out for being among the easiest to install."

The SMC TokenCard Elite is 100% interoperable within IBM environments. It's also fully compatible with both IBM and IEEE 802.5 Token-Ring standards, fully software configurable, and backed by a lifetime warranty. You get lots of extras, too. Like free SNMP management.

But the story doesn't end there. SMC is not only the technology leader but also the low price leader.

In fact, with an incredible new price of $249 in a 50-pack, and only $299 for a single card, the SMC TokenCard Elite is priced far lower than any other Token-Ring adapter.

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With SMC Token-Ring products priced 50% lower than typical solutions, that can translate into a savings of over $35,000 per 100-node installation. Without your having to sacrifice quality, reliability or peace of mind.

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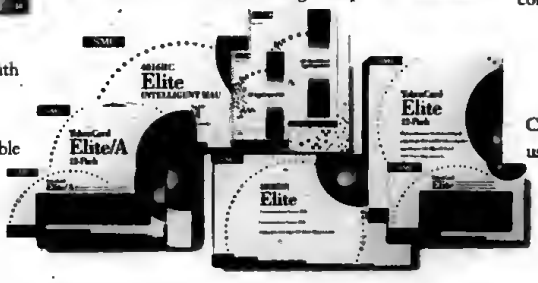

In fact, according to independent network testing laboratory LANQuest Labs, EZStart is "head and shoulders above the others."

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Infomart opens lab doors

By Mitch Betts
DALLAS

The Infomart vendor showcase opened its doors recently to corporate information systems departments looking for a place to conduct interoperability tests and create prototypes of new systems.

Already signed up are IS executives from nearby Abbott Laboratories and Neiman Marcus, as well as Rockwell International Corp. in Seal Beach, Calif. All have agreed to rent laboratory space in the building to evaluate technologies offered by Infomart's tenants and others.

The move to expand the Infomart mission from product-on-a-pedestal showrooms to IS integration problem solver was instigated by users on Infomart's advisory board, said board member George W. Beeler Jr., chairman of the information technology division at the Mayo Clinic.

Max Hopper: *American Airlines' own tech lab is running out of room*

The complexity of client/server systems is leading users, vendors and consultants to build labs or contract for interoperability testing. "If you're building systems with more than one server or more than one network, you can't afford not to do some testing," Beeler said.

"Rather than go through the shuttle diplomacy of installing [experimental technologies] in our own facilities or at a vendor's, we felt that opening a Corporate Evaluation Center at Infomart would be the most cost-effective way to do it," said Bill Franks, chief information officer at Neiman Marcus in Irving, Texas.

Infomart groups dozens of vendors, a client/server laboratory run by Dallas-based consultancy B. R. Blackmarr & Associates, Inc. and a fiber-optic LAN that links the vendors for collaborative projects. For example, Rockwell recently used its Infomart test center to study the ease of loading large, mainframe-based accounting files into relational database management systems running on a Unix platform.

Max Hopper, senior vice president for IS at American Airlines, said he would consider using the Infomart facilities for short-term projects because his own technology lab is running out of space.

The Corporate Evaluation Center program was announced during a summit meeting of 17 IS managers and 16 vendor executives. The topic was how to speed up the process by which corporate IS teams evaluate multivendor technologies before purchase.

Several users complained that today's client/server projects can involve 10 or more vendors, who often engage in finger-pointing when product incompatibilities occur and who rarely collaborate enough to solve the problems.

"The burden of integration always falls on us," said Phillip Farr, MIS director at Fina Oil & Chemical Corp. in Dallas. Vendors should at least share that responsibility, he said.

James F. Sutter, vice president and general manager of IS at Rockwell, said the energy spent on being an in-house systems integrator of ordinary products would be better spent on building more innovative systems.

Branch offices gain data bank

Holding firm seeks to standardize access

By Craig Stedman

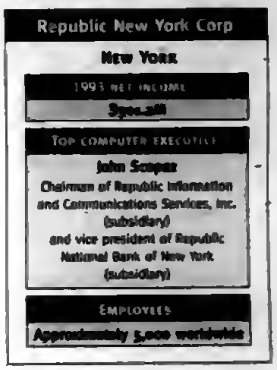
Republic New York Corp. has spent the last two years spreading the data processing wealth among the branch offices of its four banks. First it put IBM RS/6000 systems in each office to run teller transactions; later it added spreadsheet and word-processing capabilities to the machines.

Now the New York-based holding company is using the distributed RS/6000 network to carry out a more top-down information systems project. All of Republic's product information and banking policies and procedures are being put on-line to ensure that employees in different offices work from the same script.

One master list

"We're taking advantage of the network, but the good thing is it's controlled centrally," said Bob Schlieper, senior vice president of domestic systems support at Republic's IS subsidiary. "I don't have 59 branches that are editing this thing. All of the branches will be working off the same [data]."

Republic, which ranks 20th among U.S. bank holding companies with assets of $41.9 billion as of March 31, began planning the project earlier this year. It rolled out a release of on-line data to its corporate call center in Brooklyn in April, according to Schlieper.



The first batch contains information on locations, operating hours and automated teller machines for the 59 branch offices of Republic's two New York-area banks — Republic National Bank of New York and Republic Bank for Savings.

Product and policy data is

Republic, *page 90*

Jeffrey M. Kaplan

Keep in touch

Outsourcing contracts that save money in the short term may wind up costing more than you bargained for if you fail to stay close to the evolving needs of your end users. To do this, the in-house information systems staff should rely more on the vendor than is common in most outsourcing situations.

Many customers have become relatively adept at constructing outsourcing contracts to get the best deal possible. The problem is they tend to concentrate on asset protection and system availability concerns and ignore how the vendor will ensure that end users' changing requirements will be identified and met.

Vendors that have been brought into a customer operation to maintain existing computer systems will often focus on maintaining those systems. This is what they are being paid for. Therefore, these vendors have no incentive to offer proactive advice concerning emerging end-user demands.

This could be a flaw in many contracts.

Recipe for failure

This oversight is understandable. Most chief information officers and IS managers entering outsourcing agreements are primarily concerned that their vendors keep the systems up and running. Therefore, they typically stipulate response and resolution time hurdles that vendors are expected to meet. They build in escalation procedures that ensure timely responses and quick resolutions. They factor in the time it takes to receive spare parts and get a field engineer on site. And finally, they use penalty clauses and incentive packages to motivate their vendors to "do the right thing."

Contracts that severely restrict outside vendors from acting as full partners with the IS staff are doomed to fail. Vendors may succeed in servicing the installed systems but fail to feed the IS staff valuable information about end users' rapidly evolving needs. This kind of feedback is not rewarded in many contracts.

As a result, IS organizations risk losing touch with their end users. The IS staff may be too busy charting a future for their operations to consider the changing needs of their end users.

Truly successful outsourcing agreements build in mechanisms to encourage structured dialogue between customers and vendors. Customers in these arrangements do not view their vendors as simple tools to execute tasks that the internal IS staff no longer wants to do. Instead, they consider the outside vendor a valuable partner that can supplement their skills, extend their reach into the end-user computing environment and generate valuable feedback to help them plot the next stage of their IS evolution.

Customers should establish end-user advocacy committees that meet regularly to review the performance of their outsourcing vendors. These same groups can recommend ways to ensure that end-user needs continue to be met.

As customers turn to outside vendors to serve as their "arms and legs" to respond to their end users' day-to-day computing needs, they must also recognize that these same vendors will serve as their eyes and ears when it comes to sensing the next round of IS requirements. They should carefully evaluate the ability of potential vendors to perform this pivotal function and build in processes to ensure that this important input is encouraged in the service contract. They should also be prepared to pay extra for this added value.

Kaplan is a director at Dataquest, Inc.'s Worldwide Services Group in Framingham, Mass.

Digital doubt leaves users dangling

By Mary Brandel
NEW ORLEANS

■ Fear, uncertainty and doubt hovered at Digital Equipment Corp.'s recent national user group meeting as customers wondered which businesses the company would disband.

Chief Executive Officer Robert Palmer has confirmed that the company will sell or spin off some business units [CW, May 9]. But at the Digital Equipment Computer Users Society (DECUS) gathering here two weeks ago, he said he would not decide what to divest until June — after he has had a chance to get customer feedback.

He got a large dose of feedback at DECUS, as users spoke openly about what was on their minds.

"Our management has decided against Rdb," said Steven Tihor, referring to Digital's relational database package, "because we were unable to get enough commitment from Digital that it would be continued." Tihor is assistant research scientist at New York University in New York.

Another user questioned the logic of purchasing Digital systems on the basis of their tested compliance with Digital storage subsystems "if we think the storage unit may be sold."

"We're under the impression that the VAX will be yet another abandoned platform — not in terms of support, but the investment value is falling off the cliff," said Kenneth D'Aquin, system manager at the University of New Orleans. He added that he expects maintenance costs "will escalate 5% to 10% every year — until five or six years from now, it won't be profitable for the end user to continue supporting it." The viability of OpenVMS was also in doubt among attendees.

Analysts have speculated that the profitable storage unit is a potential target for Digital to sell off. But most say it would be suicidal for the company to drop support for OpenVMS. Digital said it puts equal resources into OSF/1 and OpenVMS and is working on a new version.

"I would be surprised if a large percentage of our customers were not using VMS 15 years from now," said Philip Auberg, systems marketing manager at Digital.

Rumors have long circulated about an Rdb sell-off, but some analysts point to the system's recent port to the OSF/1 operating system as a sign of Digital's continued interest.

There appears to be little relief for concerned customers until at least this summer. "I could be more specific if this meeting were being held a month or so down the road," Palmer told DECUS attendees.

Indications from product managers may not be reliable because "they have no alternative but to continue with the posture" that their product line will stay within Digital, Palmer said.

Detour possible

But he emphasized that divested businesses would likely not result in a dead end for customers. Palmer said he was striving for relationships like those of PolyCenter and IBM's NetView, although he didn't know how many deals would be as mutually agreeable as that partnership. Last year, Digital announced it was licensing IBM's NetView/6000.

As to how customers would be informed, Palmer said he would like to announce the decision and continuation path at the same time but that it would not be possible in all cases.

Digital has already started to divest certain software packages. The company recently signed an agreement with Touch Technologies, Inc. in San Diego through which Touch will maintain several Digital applications, including DECdecision, DECquery, DECcalc, DECgraph and DECslide.

Also, a recent newsletter from the Digital Dealers' Association — a group of resellers for the vendor's gear — said Digital has "three to four dozen marketable software products for which it would like to find surrogate parents."

DECUS '94 New Orleans
MAY 7 – 12, 1994

Reporter's Notebook

● At its national user group meeting, Digital made it clear that its primary engineering focus these days is clusters.

In the next two years, it will ship OSF/1 clusters that live up to the original VMS cluster functionality, according to Terry Shannon, an analyst at Illuminata in Hollis, N.H. Within three years, he said, it will likely have clusters that combine OSF/1 and OpenVMS. The company is just starting Microsoft Windows NT projects, said Donald Harbert, vice president of operating systems.

● Interoperability among its operating systems is another large investment area, with the Distributed Computing Environment standard playing a major role.

"We want to get our operating systems as close as we can without turning one into the other," said Philip Auberg, systems marketing manager.

● Will Digital ever build Alpha servers with optional Pentium chips? After all, its 2100 server is not built in the high-end systems plant but in its PC plant. Because of that, "all kinds of things become possible," said Willy Shih, manager of NT and OSF/1 systems.

● OpenVMS was alive and kicking at DECUS — even on a laptop. An OpenVMS spokesperson said the government might be interested in such a system for computing on submarines. OpenVMS management software with a Windows interface is also expected from Digital in October.

● July will see the debut of "Mustang," a Peripheral Component Interconnect (PCI)-based box priced around $2,500 that will effectively retire current low-end Alpha-based PCs and workstations, according to Shannon. In October, a DEC 7000 is expected, with 12-processor symmetrical multiprocessing capability, a PCI I/O architecture and perhaps a processor upgrade, he said.

Also likely is an EV-5-based DEC 2100 server in the first half of 1995.

● Mitsubishi is slated to deliver products that compete with Alpha servers before the end of the year, Shannon said.

● It will be another six to 12 months before users can truly run all three Digital operating systems on all Alpha servers.

At this point, the company expects only 9% of its current customers to migrate to PC LANs running NT, according to Al Vaskas, Unix marketing manager. It is setting its sights on Daytona running on its well-received DEC 2100 server as a "very attractive small to medium-size business solution," Shih said.

● Look for tiered pricing from Digital, particularly for its PolyCenter management software. "There's no more urgent area than our approach to pricing," said Bud Enright, client/server software manager. — *Mary Brandel*

Pyramid lowers Nile to woo mainframe users

By Mark Halper

Pyramid Technology Corp. has long understood that users do not bolt from mainframes to Unix servers overnight, so last week it added a low-end model to its Nile series of servers to help in the gradual weaning process.

The new Nile 100 enters the Nile line at $155,000 for a two-processor version, well below the $450,000 that marked the entry point of the Nile 150 series introduced last fall [CW, Oct. 4, 1993].

It also weighs in at about half of its big brother's performance. While it runs on the same 150-MHz R4400 chip as the Nile 150, the Nile 100 supports up to eight processors, compared with the Nile 150's 16. MIPS performance tops out at 1,080, compared with 2,080 on the Nile 150 (see chart).

The Nile gets filed

Specs for Pyramid's new Unix processors

	Nile 100	Nile 150
	Up to 8 processors	Up to 16 processors
	2G bytes	4G bytes
	250G bytes	1T byte
	26	72
	$155,000	$450,000

Pyramid's director of product marketing, Judson Groshong, said Pyramid is targeting the Nile 100 at users who are dabbling in downsizing from mainframes.

A typical Nile 100 user, Groshong said, would be one starting out on a downsizing project and moving less critical applications and operations, such as decision support and data warehousing, to a Unix server while keeping more critical programs and data on the mainframe.

"There are many customers beginning their move to open systems by starting with smaller machines while they re-engineer and rehost," Groshong said.

Trimark Investment Management, Inc., the Toronto-based financial services firm, is one company considering purchasing a Nile 100, but not exactly for the reasons that Groshong suggested.

Trimark already runs one six-processor Nile 150 to track the account activity of about 800,000 customers and has another Nile 150 for backup and monthly batch operations. The company also uses a Hewlett-Packard Co. HP 9000 minicomputer to run a general accounting system. It is considering replacing the HP 9000 with a Pyramid machine, according to Brian Deegan, vice president of information systems. Such a move would cut costs by eliminating the need to support and train users on two systems, Deegan said.

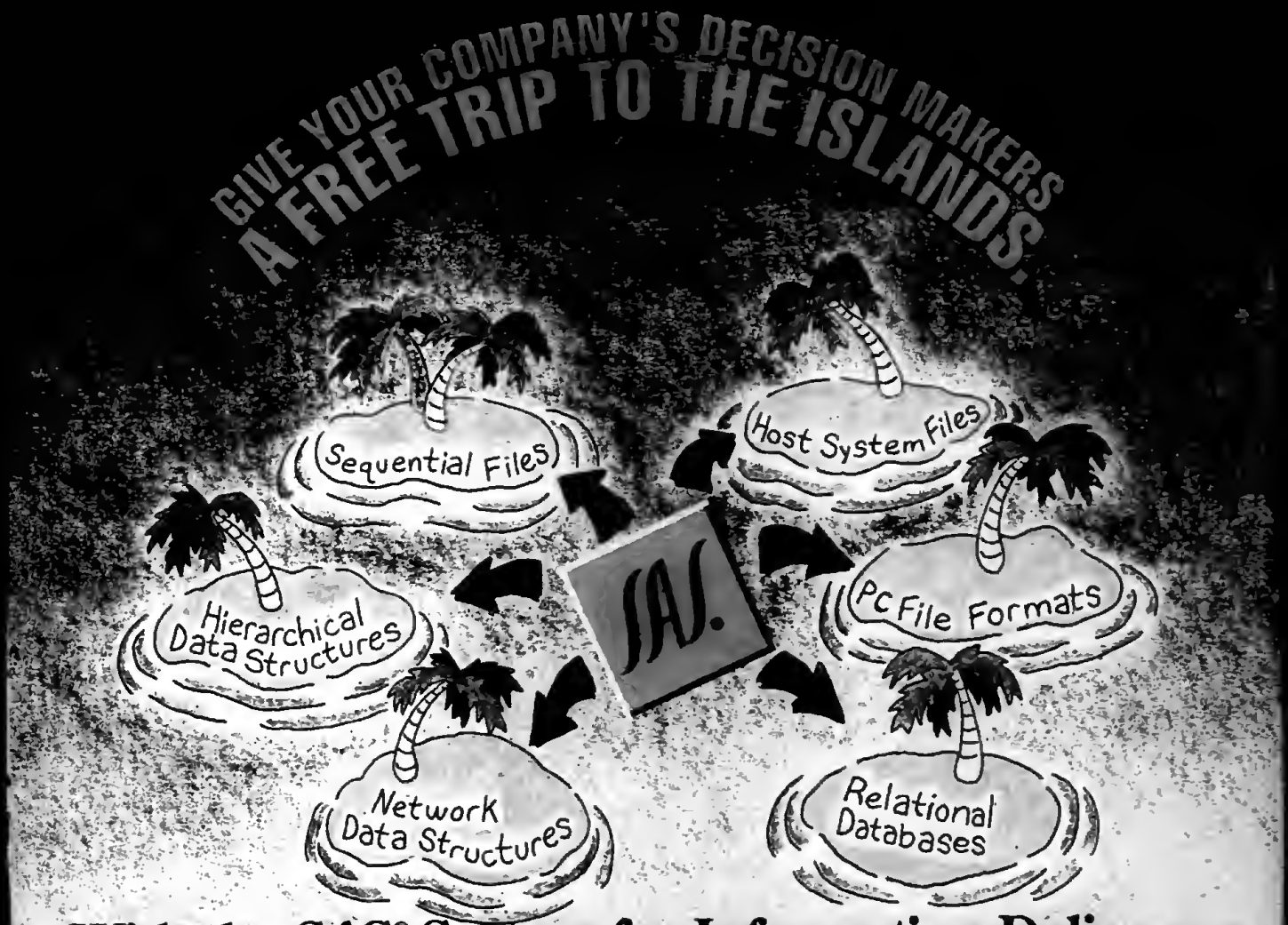
Tryouts planned

Trimark plans to evaluate both a Nile 150 and a Nile 100 for that job, as well as for an imaging program that the company would use to store purchase and sell orders and for a marketing database.

Deegan said the company will choose the much lower-priced Nile 100 if it determines that the machine is powerful enough to accommodate all those functions and can be upgraded to cover its needs for two years.

Norton Greenfeld, an analyst at Computer Intelligence/InfoCorp in Westboro, Mass., described the Nile 100 as a "divisional server," noting that it should fit a product gap between the Intel Corp.-based departmental superservers and enterprise servers.

"It's interesting positioning," Greenfeld said. "They're hitting a point in the market no one else is really aimed at. It will be good for a regional headquarters or a division-level application."



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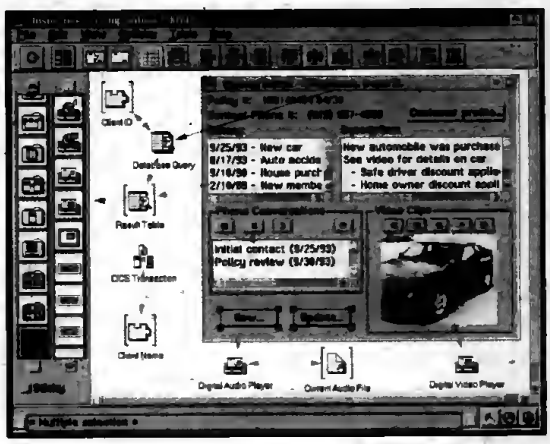

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Republic

CONTINUED FROM PAGE 85

scheduled to start becoming available on-line to call center operators this month, according to Michael Carleton, an associate managing director at Republic National who is chairman of an internal committee overseeing the project.

"We're using the call center as a sort of laboratory to do trial runs and work the kinks out" before empowering the branches to access the information, he noted.

Republic's Michael Carleton: *On-line information will service 50% to 60% of all calls*

The first branches are expected to get a green light almost immediately. But Carleton said it will probably be July or August before all the product information is made available. That is because of the time required to input data into the templates that Republic has set up using Applix, Inc.'s Applixware tool set.

More features are under development, including electronic signature verification and a mapping capability that would allow operators to provide customers with directions to individual branches, Schlieper said. The on-line data will also be made available over time to Republic's three branches in California and its eight offices in Florida.

New and improved

Carleton said the on-line project is aimed at improving the reliability of the information that Republic employees give out "based on a central control of what's being presented on the phone." The switch to electronic data should reduce the chance that workers will use old information, he noted.

Republic also said it hopes to improve customer service without adding more staff by reducing the amount of time it takes to get at information. "This could eliminate having to thumb through a 600-page manual," Carleton said. The average length of calls to the Brooklyn center seeking branch information has already been reduced by about 25%, he said.

Eventually, the data collected on-line should be useful "for 50% to 60% of the calls that we're getting," Carleton said. Meanwhile, branch office employees will be able to refer to it in face-to-face dealings with customers and use it to identify corporate workers who are responsible for specific products or policies to get questions answered.

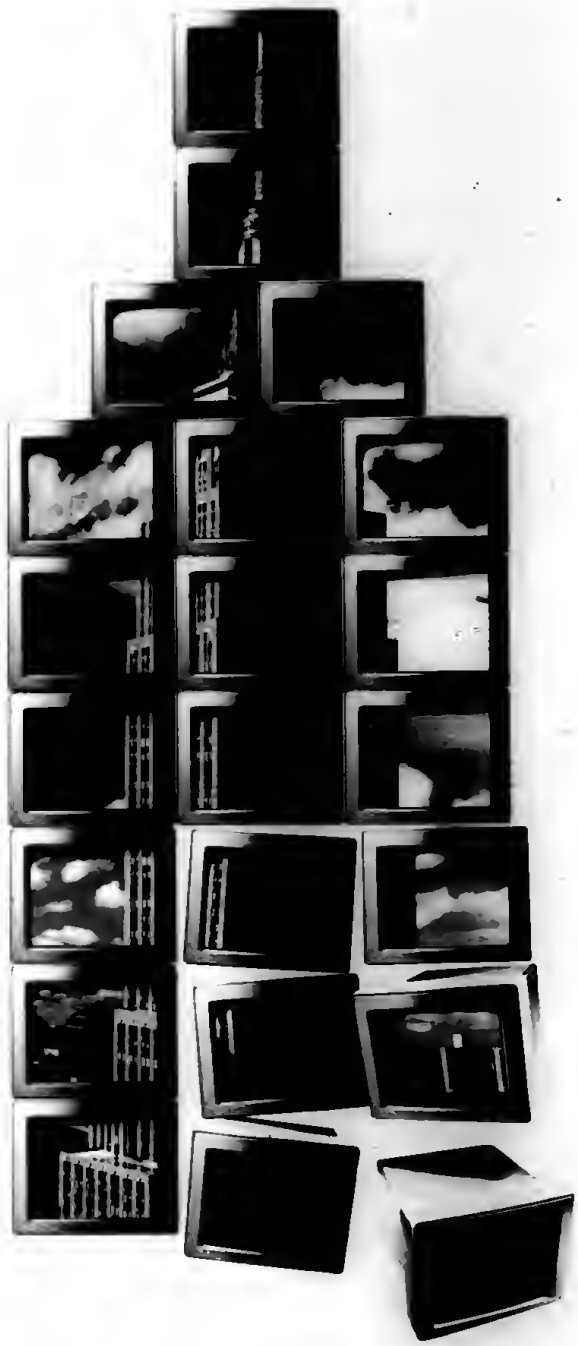
Republic originally bought the Applixware software in late 1993 for its spreadsheet and word processor applications, which are used in the bank's branch offices, Schlieper said. But when Carleton's committee proposed the on-line data project, IS was able to use Applix's Extension Language Facility macro scripting language to create the application.

The data is being stored for now in flat files on a central RS/6000, although Schlieper said Republic will likely implement a relational database later this year. Workers in the call center and branch offices will access the information from X Window System terminals connected into the RS/6000 servers using an Applix graphical user interface with customized icons.

Deborah Williams, a technology analyst at The Tower Group, a banking consultancy in Wellesley, Mass., said most banks already have or are putting their loan policies on-line to ensure that government regulations are being followed. But Republic's wide scope "sounds like a fairly unique project," she added.

The bank's plan "certainly makes sense at the call center level because that exists solely to provide information to customers," Williams said. However, she said it is unclear how beneficial the on-line data would be to branch workers.

Republic officials acknowledged that the bank has been putting increased emphasis on the call center, but the technology is "geared and developed for either resource usage," Schlieper said. "We spent a lot of money to automate the branches, and what we've done here is take it a step further."



Spotlight will shine on middleware at DB/Expo

By Kim S. Nash

Product announcements from relational database powerhouses, including Oracle Corp. and IBM, are expected to dominate this week's DB/Expo '94 show in San Francisco. But middleware, gateways and other less glamorous products may steal the show because they are likely to do more to advance the client/server cause, observers said.

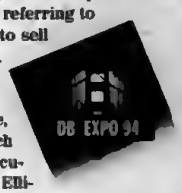
Such linking products "are a big factor in determining which databases we can use for given applications," said Garry Robinson, technology consultant at SAIF Corp., a Salem, Ore., workers compensation firm.

Database makers that can provide gateways between their databases and those of their competitors have extra leverage in vying for client/server business, agreed Donald A. DePalma, an analyst at Forrester Research, Inc. Sybase, Inc.'s April acquisition of middleware maker Micro Decisionware, Inc. puts it ahead of rivals, he said.

Decision Technology, Inc., based in Princeton, N.J., will try to answer user pleas for links between mainframe and Unix databases with Decision Analyzer for Servers. The product — the 9-year-old firm's first nonmainframe offering — is intended to give PC users transparent access to data on mainframes, minicomputers or network servers. The product is due to ship in July. It is priced at $4,000 for up to nine users.

Meanwhile, one-upmanship among database companies is alive and well. Here is a rundown of the splashier events expected at the show:

- **Sybase** plans to sketch out plans for how it will hop onto the information superhighway. New products are expected, but "it's not like what Oracle is doing. It's a client/server approach," a spokeswoman said. She was referring to Oracle's mission to sell its database atop massively parallel hardware from NCube, a company of which Oracle Chief Executive Officer Larry Ellison is majority owner.



At a user group meeting early this month, Sybase executives alluded to information highway-type applications that users could build with Sybase's SQL Server database.

- **IBM** will formally introduce upgrades to its relatively new, workstation-level DB2 databases, DB2/2 for OS/2 and DB2/6000 for IBM's AIX Unix operating system. Steve Mills, general manager of IBM's software solutions group, plans to unveil new features for the databases, including support for stored procedures, triggers and binary large objects [CW, May 16].
- **Oracle** plans to unveil — finally — CASE 5.1, an upgraded computer-aided software engineering (CASE) tool set that it had promised to ship early this year. High-level executive departures at Oracle's CASE unit in the UK contributed to the product's delay, said a source at the International Oracle Users Group.
- Menlo Park, Calif.-based **Gupta Corp.** will announce SQL Windows 5.0, an upgrade to the firm's graphical development kit that includes object-oriented features. SQL Windows 5.0 includes a new technology for rapid application prototyping, dubbed QuickObjects.

Rival **Uniface Corp.** in Alameda, Calif., plans to announce and demonstrate Uniface 6.0, an upgrade to its flagship application development kit that is said to include improved business and data modeling features.

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JBA International has introduced Version 3 of its Business 400 Financial software for the IBM AS/400.

According to the Rolling Meadows, Ill., firm, Version 3 offers modules that include general ledger, accounts payable, accounts receivable, cash management, financial manager, fixed assests and advanced financial integrator.

The Business 400 Financial software also provides multilingual facilities that enable automatic allocation of a user's preferred screen language from any terminal.

Pricing starts at $48,000.

▶ *JBA International*
(708) 590-0299

BGS Systems, Inc. has announced DB2 Extractor Release 2.0 and Crystal 7.0, software tools that automate DB2 application performance efficiency analysis and prediction for reducing mainframe costs and deferring unneeded upgrades.

According to the Waltham, Mass., company, DB2 Extractor Release 2.0 processes DB2 accounting and performance trace data to automatically pinpoint efficiency opportunities and provide improvement recommendations for static/dynamic SQL, tables and indexes.

The product summarizes table performance by all SQL accesses, index efficiency analyses and denormalization candidates based on table join pattern detection.

Crystal Release 7.0 predicts DB2 application performance and resource costs prior to production. It uses automated what-if scenarios that include test-to-production table growth, production execution frequencies and buffer hit ratio sensitivity. Prices start at $14,000.

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Baber Information Services, Inc. has introduced Reveal Scheduler, a job-scheduling utility.

According to the Irving, Texas, company, Reveal Scheduler lets users run batch jobs unattended in off-peak hours.

Other features include calendaring, job forecasting, defining job events, group job submission with built-in job dependencies and viewing jobs scheduled for a future date.

Prices range from $995 to $8,995.

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Tone Software Corp. has introduced OMC-VNI, a virtual node interface designed to enhance application print management.

According to the Anaheim, Calif., company, OMC-VNI dynamically removes print overhead from CICS, IMS and DB2 applications, without reprogramming.

The product allows users to automatically send transaction and application output directly to the JES spool. Features include reduced transaction wait time, flexible printer pooling and time-saving error recovery.

Prices range from $3,500 to $8,900.

▶ *Tone Software Corp.*
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California Software Products, Inc. has announced Release 1.5 of Baby/4xx, its RPG software system.

According to the Santa Ana, Calif., company, Release 1.5 offers increased IBM AS/400 compliancy, better performance and Microsoft Corp.'s Windows NT compatibility.

Features include multiple prefix message files support, second-level message support, automatic update of an optional migration support utility, extended file resources, larger program support and physical file support for more than 500 fields.

Baby/4xx costs $3,500.

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But within just days of the fading hook shot that sent the CIO's announcement memo into Farrell's round file, he was using the new applications electronically dispensed by RemoteWare. Entering daily orders, filing expenses, and penning a humble note of thanks to the CIO, from 30,000 feet. All quietly and automatically delivered by RemoteWare while he slept. A fitting complement to the inimitable selling routine of one Jared Farrell. Indeed.

Now, as he slid into the Central Office Staff Room six months later and five minutes late, Farrell watched the eyes of the room swivel towards him, like half a volley at Wimbledon. And the CIO and VP of Sales were headed his way with...a plaque? "Jared Farrell, Salesperson of the Year," it read. Salesperson of the Year. Imagine that.

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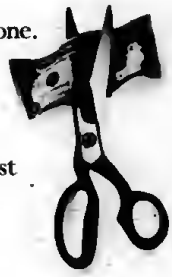

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How to Unravel the Client/Server Mystique.

First, accept that there is no mystique. Rather, there are hordes of slightly frantic software companies content to have you believe that effective open system solutions remain elusive while they rush to understand, develop, and market their interpretation of client/server. Then there's Lawson Software.

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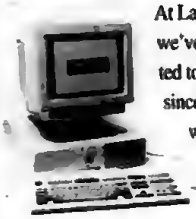

At Lawson Software, we've been committed to open systems since our company was founded in 1975. We've always believed that to be a valuable business partner, an applications provider must offer choices for business strategy development. So for us, client/server isn't a new phenomenon. Instead, it's the next logical step in our development. And it exists today – fully developed and fully functional – in the latest release of our enterprise-wide, cross-industry, world-class business application software.

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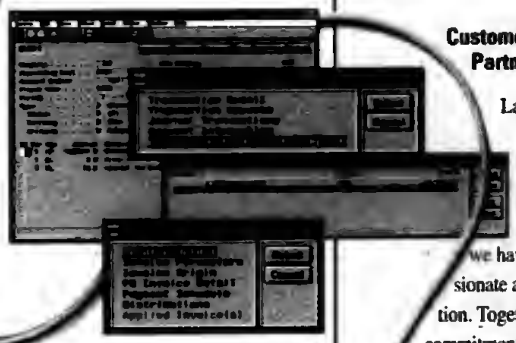

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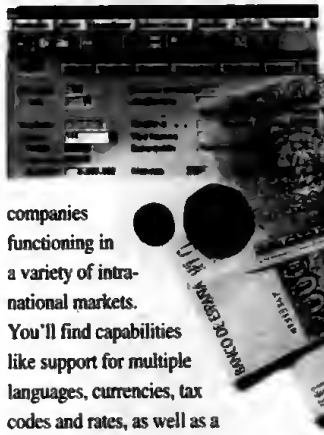

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Expanding the client/server market

Vendors offer their own strategies for winning the market through improved tools and features

By Melinda-Carol Ballou

The client/server tools market is swarming with entrants touting new releases and the high-end capabilities of their wares for complex application development.

The goal of developers, systems integrators and consultants alike is to cut through the hype to find and take advantage of features that will take them beyond the decision support and pilot work now being done.

"We're starting to do some mission-critical work, but we're still in development," said Beth Meyer, a vice president and manager of graphical user interface application development at The Chase Manhattan Bank NA's technology center in New York.

Opting for VisualWorks

The bank is using ParcPlace Systems, Inc.'s VisualWorks for trading applications where there is a need for higher response time. "But we use a whole variety of products. We're always looking at tools," Meyer said.

In the past two weeks, a sampling of vendors announced that new versions of their products allow for higher-end, production client/server applications. They include Easel Corp., ParcPlace Systems, Inc., Trinzic Corp., Blyth Software, Inc., Uniface Corp. and Symantec Corp. [CW, May 9].

"Each vendor has its own strategy for how to move up the food chain," said Tim Harmon, an analyst at Meta Group, Inc. in Burlingame, Calif. "I count 48 vendors that have client/server development tools. They're all jumping up and down to get attention about how they're better than [Powersoft Corp.'s] PowerBuilder. And with so many of them, it's hard to figure out which have a viable message and which don't."

Harmon added that the ability of tools to run in distributed object environments could ultimately be the key to their success as the market experiences an inevitable shakeout in the coming months. "The Smalltalk vendors may have a leg up there," he said.

A sampling of Smalltalk vendors include ParcPlace with VisualWorks (which is also being sold by Hewlett-Packard Co. under the name of Distributed Smalltalk), Easel and IBM with its VisualAge and VisualGen tools, which will be released in the next few weeks.

Steve Fagone, senior systems manager at John Hancock Mutual Life Insurance Co. in Boston, used Easel's Workbench tools to create a customer service application on OS/2.

"The application is very complex — it runs six concurrent host sessions on the mainframe," Fagone said. "We take information from our various administrative inquiry systems, put it into more usable format and combine it."

Fagone said his group will migrate the OS/2 application to Windows 4.0 around mid-1995. This will allow the group to take advantage of new features in the Easel tools.

"What intrigues me the most is that from a single source code we can compile under Windows and OS/2, which will help me with dual maintenance and making the transition," Fagone said.

Migration issues were also key for users of Blyth's Omnis tools. Ed Ware, database administrator at National Public Radio in Washington, used Omnis to create a scheduling application for NPR's "Talk of the Nation" radio show. His group originally adopted Omnis for its multiplatform support of both Macintosh and Windows.

The Omnis difference

NPR is evaluating tools to develop a much broader, mission-critical application that would provide resources for listeners from a range of its shows. For Ware, multiplatform support and portability — along with built-in version control and configuration management — were key differentiators for Omnis.

The strong cross-platform and cross-database support available with Uniface's fourth-generation tools, combined with a much more accessible user interface available with its new version, makes it a strong contender for survival, according to Harmon. But pricing will be a decisive factor, and Uniface's heavy runtime license costs, considered onerous by developers, may hurt the company, he added.

Interoperability

Users look for standards on reuse libraries

By Gary H. Anthes

Standards for setting up and linking libraries of reusable software are in their infancy. However, developers and other users say emerging standards for library interoperability will make it much easier to establish reuse programs in their companies.

According to Jim Moore, senior engineer at Loral Corp.'s Federal Systems Division in Gaithersburg, Md., companies with reuse programs must often deal with multiple sources — including commercial libraries, government libraries and their own internal repositories. All have different formats, query methods and user interfaces.

Compounding the problem, the multiple sources contain redundant components, something not always obvious to the user. "It's a messy problem," said Moore, chairman of the executive board of the Reuse Library Interoperability Group (RIG). "It's one of the things that causes people to throw up their hands and say, 'It's just easier to do it myself.'"

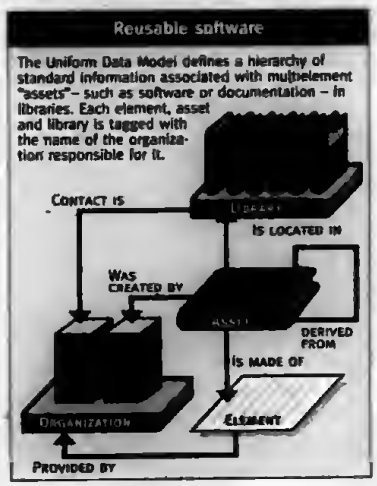
The RIG recently published the Uniform Data Model (UDM), the group's second standard for reuse library interoperability. UDM defines a standard set of information about "assets" — such as source code, documentation or specifications — that reuse libraries should be able to exchange. The definitions, attributes and relationships in UDM extend those in an earlier RIG standard called Basic Interoperability Data Model (BIDM), which is now a subset of UDM.

A step forward

Vendors such as IBM, Software Productivity Solutions, Inc., and Atherton Technologies are beginning to use the RIG standards in their products and for their own internal software reuse programs. IBM said it uses BIDM in its ReDiscovery product — which automates the search, selection and cataloging of reusable components — and plans to incorporate UDM as well.

"When users buy those products to set up a local reuse library, they have taken a step toward interoperability and they don't even know it," Moore said.

The existing standards, with extensions planned by RIG, will enable users to easily link disparate libraries and access them with just one user interface, query method and downloading procedure, Moore said.



"We are imagining a world in which the user can, in effect, reach through his user interface to holdings in other libraries, because the libraries are networked together," he said.

"I hope to have reuse libraries in all our divisions within a year or so," said a software engineer at a large aerospace company who asked not to be identified. He said the RIG standards would help ensure interoperability across divisions while allowing each division to set up a unique, or "domain specific," repository. He said they will also facilitate finding and getting software from government libraries that are available to the public.

Major software libraries are available from NASA and the U.S. Departments of Defense and Energy. The Defense Department has a pilot system in place that uses RIG standards to enable users of its Asset Source for Software Engineering Technology library — which is available to the public — to also link into the Defense Software Repository System and the Central Archive for Reusable Defense Software.

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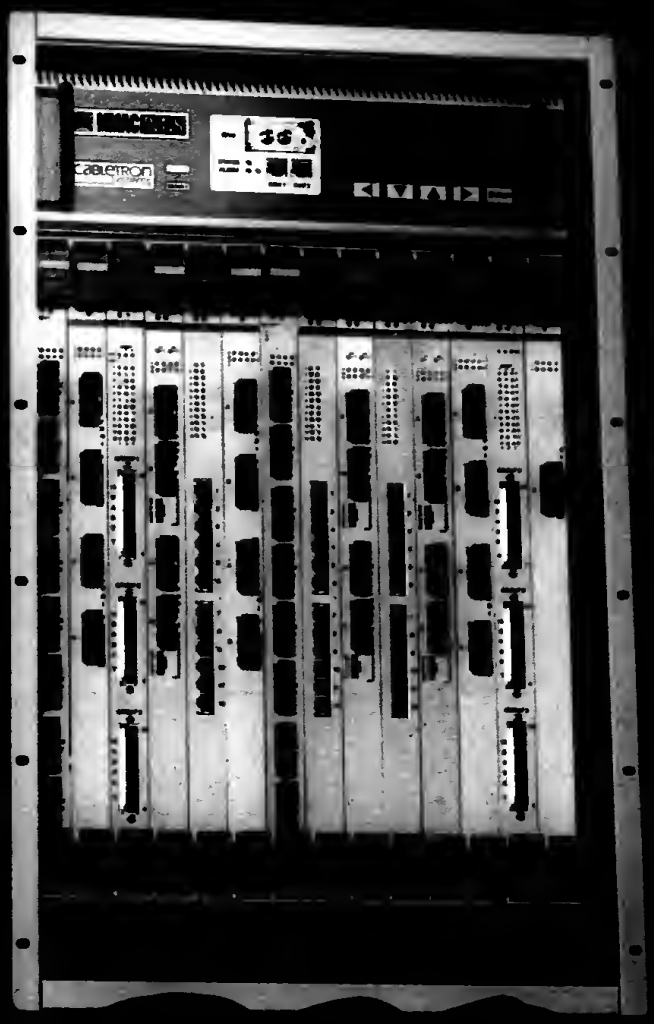

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David Michael Bernard

Creating successful programs

For many, Windows development has been a scary concept. Blame that on the longtime association of Windows with such complex programming languages as C and C++. Simpler, higher-level Windows development environments have become extremely popular because with them, Windows applications can be created quickly and without the services of the resident rocket scientist.

However, those who flocked to these environments to avoid programming code quickly realized that at least some code must be written to create something meaningful.

With Microsoft's Access and Visual Basic, many "nonprogrammers" have begun to experiment with Windows development. Because these experiments often turn into systems that many people rely on, it becomes important for users to understand the ramifications of what and/or how they do things when they write code.

Essential techniques

The overriding consideration for programming style is readability. Rookie programmers focus on "getting the thing to work," not on formatting code so others can easily understand it. Readability is accomplished with three techniques: naming, documentation and formatting.

Making up names is the most common task a programmer performs. No matter what language he uses, functions, procedures, variables and constants must be named. Poor naming makes code unreadable, requiring volumes of external reference documentation. Descriptive naming can help create code that is self-documenting — that is, it doesn't require verbose commented passages of text.

Poor naming began when programming languages restricted name lengths, either by wasting memory or by placing an absolute restriction on the length. Today, most languages do not restrict name lengths so there is no reason to use cryptic names.

Documentation dilemma

As for documentation, self-righteous programmers have talked about the benefits of documentation for a long time. However, code that relies on a large portion of descriptive prose (as comments or prose that is stored separately) for readability is only slightly better than code that has no documentation at all.

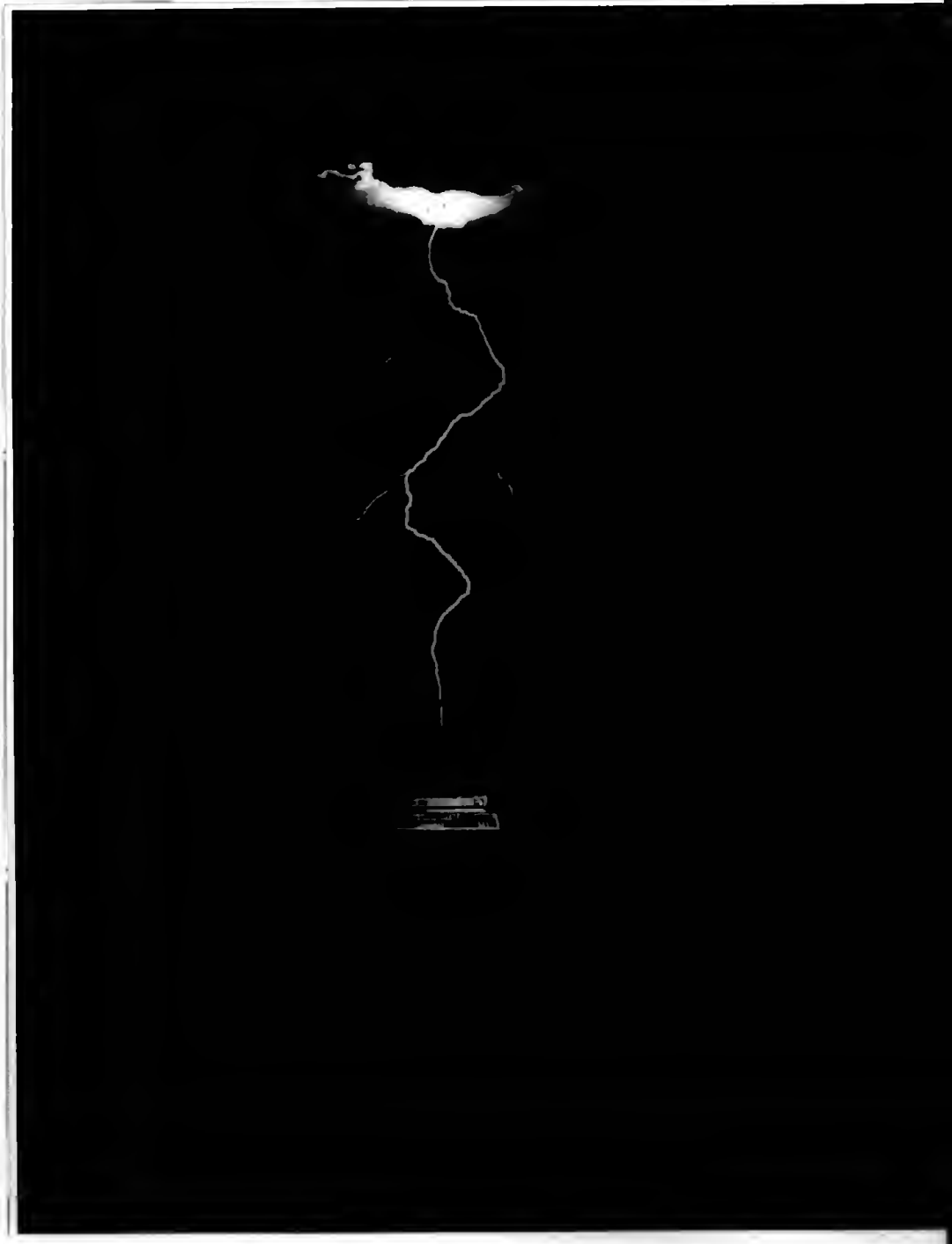
Code that uses variables that have been named with care is readable with only a brief comment that describes the overall purpose of the module.

> The overriding consideration for programming style is readability.

That brings us to the last major programming task, formatting. Have you heard the old adage that an entire C program can be written in a single line of code? Just because you can do something does not mean that you should do it. The litmus test for good programming is no longer strictly whether it works but whether it can also be understood. A consistent pattern of indenting is a must.

Programmers are being created at an alarming rate. So alarming, in fact, that significant development resources are used to clean up the output of these unsuspecting rookies. We must take the time *now* to implement technical training programs for these people. Don't look now, but that mailing list program Jones wrote in Microsoft's Access to track his sales force may become the marketing department's corporate standard!

Bernard is a technology management consultant at Omicron Consulting in Philadelphia.



[redacted]

Lucid, Inc. has announced that it has bundled its C++ compiler and C++ Energize Programming System with **Rogue Wave Software, Inc.'s** Tools h++ class library.

According to Lucid in Menlo Park, Calif., Tools h++ is a general purpose set of more than 100 C++ class libraries. It includes a host of data structure classes and a complete set of collection classes modeled after the Smalltalk-80 environment.

Energize is a development environment for C and C++ development that offers integration with popular configuration management systems, graphical user interface builders and tool kits and utilities that shorten development cycles for mission-critical applications.

Lucid C++ is a native C++ compiler that provides small executables for C and C++ language dialects.

Energize costs $4,250 for a single unit and $2,950 for a unit of 10. Lucid C++ costs $1,095.

▶ *Lucid*
(415) 329-8400

Durand Communications Network has introduced DC Genesys, a relational multimedia database tool kit designed to work with any bulletin board service doorway, according to the Santa Barbara, Calif., company. DC Genesys enables users to make products and information services visually available over standard telephone lines.

DC Genesys provides an open architecture database development platform that supports Borland International, Inc.'s dBase III and IV and Microsoft Corp.'s FoxPro II database file formats.

IBM ANSI graphics and RISScrip are supported for on-line viewing.

DC Genesys costs $995.

▶ *Durand Communications Network*
(805) 961-8700

The Object Group, Inc. has introduced C/S Express, a programmable client/server application development code generator.

According to the Chicago company, C/S Express employs the extensive information that is stored in the relational database management system catalog to create programs that can be used as soon as they are generated. The generated code consists of an operational graphical user interface window, client/server communication links and a data access program for each table.

Generated code is either Cobol and/or C and can be executed without post-generation hand coding.

Other features include user-defined screens, multiple table joins and the ability to incorporate user-defined business logic and shop coding standards into the generated code.

Pricing starts at $18,500.

▶ *The Object Group*
(312) 472-4040

PowerCerv has announced PowerTool 3.1, a methodology and class library for application developers using Powersoft Corp.'s PowerBuilder.

According to the Tampa, Fla., company, PowerTool 3.1 houses a class library of objects, functions and templates that provide the PowerBuilder developer with a framework designed for accelerated project development, improved code quality and reduced maintenance costs once an application is deployed.

Features include full support for stand-alone Multiple Document Interface applications; a linked list of DataWindow controls that can update any number of DataWindows with a single function call; and enhanced navigational control and security.

Prices range from $99 to $8,995.

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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ❑ Yes ❑ No
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65 Communications Systems/Public Utilities/ Transportation
70 Mining/Construction/Petroleum/Refining/Agric
80 Manufacturer of Computers, Computer-Related Systems or Peripherals
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Expanding the front-end Windows market

Phar Lap's FrontRunner bridges the gap between DOS and Windows

By Ed Scannell

Phar Lap Software, Inc. in Cambridge, Mass., jumped into the market for Windows front ends with a bridge product that lets corporate programmers and users more easily shuttle between the DOS and Windows environments.

Intended as a substitute for the Windows' Program Manager, FrontRunner features a full-function DOS box that is seamlessly woven into its Windows shell. It enables users to run Windows applications directly from the DOS prompt and to cut and paste and print data from any portion of a DOS session.

To date, Phar Lap is best known among corporate programmers for its line of DOS extenders that support 286, 386 and 486 processors.

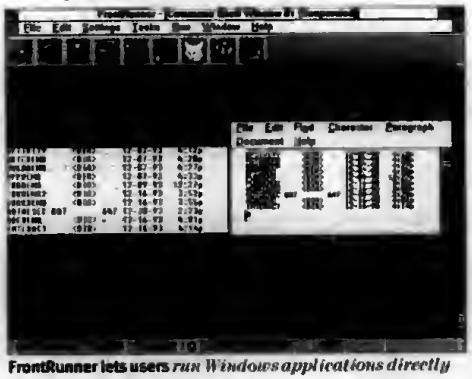
Viewing history

Another significant improvement FrontRunner makes over Windows 3.1 DOS is that users can now view their entire DOS screen history. They can scroll through as many as 16,000 lines of text or code. Currently, users can't access more than 25 lines, or one screen's worth of data, in a DOS window.

"What I find makes my life easier is [FrontRunner's] command shell design. I've found it to be more intelligent than DOS or Windows just because I can run both DOS and Windows from the command line," said Blair Learn, a programmer at Lahey Computer Systems, Inc. in Incline Village, Nev.

To make it easier to sort through Program Manager's groups and items, FrontRunner has a more simple Run Menu and Launch Bar. The Run Menu lets users run applications from a pull-down menu, while the Launch Bar keeps frequently used Windows and DOS applications just a mouse click away.

The product's new Visual Batch Language Extensions for DOS lets programmers better customize their work environment. For instance, the new capability can be used to design visual front ends to DOS batch files.



FrontRunner lets users *run Windows applications directly from the DOS prompt*

"What I appreciate [about FrontRunner] is its programmability, especially the Visual Batch Language for DOS," said Andrew Shulman, co-author of the *Undocumented DOS* and *Undocumented Windows* series of books.

Company officials do not believe the upcoming release of Microsoft Corp.'s Chicago, which promises a significantly different graphical interface, should effect the positioning of FrontRunner.

Because Chicago combines DOS and Windows, users will no longer have the option of running DOS applications directly under DOS. They must continue running DOS applications from the same Windows 3.1-style DOS box.

But Phar Lap officials said they are committed to making FrontRunner compatible with Chicago. They said DOS users will still be able to run both DOS and Windows applications from a DOS prompt.

Also programmable is FrontRunner's Status Bar, letting programmers and users create their own modules to monitor the information most important to them. For instance, users can create modules for monitoring up-to-date currency exchange rates, stock prices or manufacturing processes.

As a way of enticing interested programmers, Phar Lap is making what it calls a trial-size version of FrontRunner available. Called FrontRunner Lite, this version is full-featured but is limited to one hour of use.

Available now, FrontRunner carries a suggested retail price of $139. Users can receive the product by calling (800) 292-9622.

Briefs

Definition update

Semaphore, Inc., a training and consulting firm in Andover, Mass., earlier this month released an updated version of its "Glossary of Object-Oriented Terminology." The reference pamphlet contains over 250 definitions to provide a common set of terms for object technology. It is available free of charge from Semaphore.

Profitable agreements

Avalon Software, Inc., a provider of client/server manufacturing and distribution software applications, announced financing agreements totaling $6.8 million from major international companies. Those companies include Summit Partners with offices in Boston and Palo Alto, Calif.; Tokyo-based Itochu Techno Science Corp. and Tata Consultancy Services in Bombay, India.

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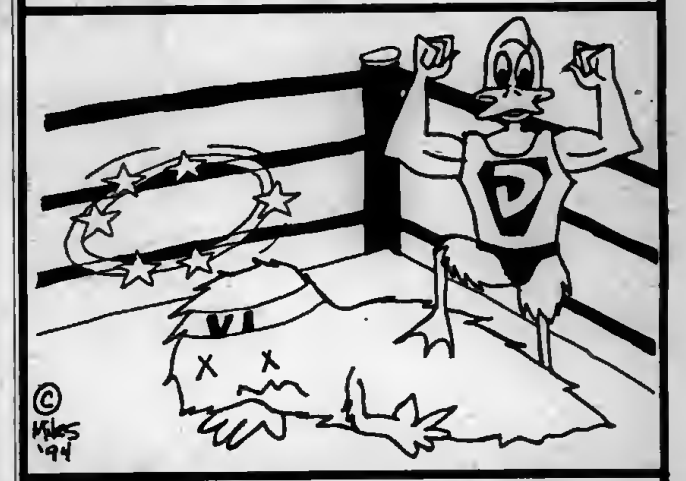

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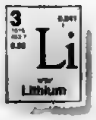

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INSIDE
Opinion: CIO replace thyself
Page 110

As easy as ABC?

ACTIVITY-BASED COSTING COULD BE THE ACCOUNTING WAVE OF THE FUTURE AS ORGANIZATIONS RE-ENGINEER THEIR BUSINESS PROCESSES. THE JOB OF FEEDING THIS INFORMATION BEAST WILL FALL TO IS.

By Mitch Betts

In the age of Henry Ford's Model T assembly line, measuring the cost of doing business meant counting the cost of raw material and labor but not much overhead. But, in the Information Age, overhead includes everything from marketing to information systems and may account for 70% of the cost of the product or service.

Surprisingly, today's accounting systems are still based on an Industrial Age model that arbitrarily spreads overhead across the board, masking the true cost of each product. So some brave companies, including Procter & Gamble Co., National Semiconductor Corp., The Boeing Co., Harley-Davidson, Inc., The Valvoline Co. and The Clorox Co., are experimenting with a radically different and controversial form of accounting that tries to assign overhead costs to the business activities that actually consume the resources.

This activity-based costing (ABC) is a buzzword that chief information officers will soon be hearing a lot more about. Management guru Peter F. Drucker has predicted that "within the next 10 years it should be in general use" in corporate America.

And if the ABC religion catches on companywide, IS will surely be brought in to provide technical support, feed the ABC system with data from the general-ledger system and maybe even overhaul the company's accounting systems.

In theory, ABC allows managers to figure out the actual cost of making a particular product and serving particular customers while spotlighting those unduly expensive activities that need to be pared back through business process re-engineering.

On the other hand, collecting the detailed data to feed the ABC monster could be a fatal distraction, critics say. As a corporate finance chief once put it: If ABC had been used in the buggy-whip business, "ABC would have faithfully attributed costs to the irrelevant activities of a dying business."

The ABC theory is simple. Instead of viewing the business as a collection of salaries and machines, ABC views the company as a bunch of processes or activities — such as training employees and processing purchase orders — each of which

Easy as ABC, *page 108*

Alex Sinn

ABC "can be the best tool available for measuring the cost of business process re-engineering," says PCS Health Systems' Julie Goldman

Easy as ABC

CONTINUED FROM PAGE 107

has its own cost driver.

Ideally, the team that implements ABC should be multidisciplinary, including finance, operations, marketing and IS. "I would certainly want my IS people involved," says John W. Hill, associate professor of accounting at Indiana University in Bloomington. "These things are information-intensive and painful enough to install that you'll encounter resistance if all the parties who have a stake in it are not involved from the beginning."

Starting with ABC

ABC got its start in the manufacturing sector — sources at Chrysler Corp., for example, say they are dynamiting their old accounting system in favor of ABC — but a smattering of businesses in the services sector are trying it, too. PCS Health Systems, Inc., a Scottsdale, Ariz.-based managed care firm with 1,500 employees involved in cost containment for prescription drug plans, has been working under an ABC model for two years.

"Our IS division has played a very minor role to date" because the finance department is running ABC software on a PC, says Julie Goldman, manager of activity-based management at PCS. But Goldman says she hopes IS will feed data from the company's general-ledger and timekeeping systems into the ABC system to replace manual data entry.

For a company in the services sector, Goldman says, the challenges are "defining your products, because you don't have a warehouse to check to find out what they are . . . and getting [white-collar workers] to think in terms of standard processes because you don't have the standardized processes of a factory floor."

Process orientation may be the biggest benefit of ABC, Goldman says, because the ABC system provides hard data for deciding which activities or processes need to be re-engineered.

"Business process re-engineering requires you to monitor three things: the quality of your process, the cycle time of your process and the cost of your process. ABC is the best tool there is to measure the cost," Goldman says.

In fact, the marriage of ABC and re-engineering has spawned a new buzzword: activity-based management (ABM).

Learning the costs

A key benefit of ABC is learning "which clients are costing you more than other clients, based on percentage of time spent," says Richard Knieriem, director of cost accounting at American Security Group, an Atlanta-based unit of insurance conglomerate Fortis, Inc.

Knieriem, who is exploiting ABC as an off-line analytical tool to "better understand unit costs and performance," says linking the costs to the revenue gleaned from that customer tells you which customers are most profitable.

Knieriem says IS has not played a direct role in the ABC implementation, but it does have an indirect role. After all, the statistics that form the raw material of the ABC system, such as the number of insurance claims processed, are all produced by IS.

Of course, collecting that detailed data can lead to a bad case of information overload. "That's why many companies that started off with hundreds of activity centers have cut down to 10 to 15 activity centers," says Arnold Schneider, an expert on managerial accounting at Emory University in Atlanta.

But Schneider says companies should not be discouraged. "It may be a little costly, but in the long run the benefits will outweigh the costs, as long as you don't try to get too much minute detail."

Some day, ABC concepts may even be applied to IS itself, helping the CIO to achieve that Holy Grail of tracing the value of IS to the company's end product.

In a report called *Uncovering the Information Technology Payoffs*, published by United Communications Group in Rockville, Md., authors Walter M. Carlson and Barbara C. McKurlin argue that traditional accounting systems have failed to show the business value of IS — but ABC could do the trick.

However, ABC applied to IS could be a double-edged sword. ABC could be used to streamline internal IS processes and monitor costs, but the same data could more easily persuade a company to move to an outsourcing vendor. In that game, the low-cost provider wins all. ■

Betts is *Computerworld*'s national correspondent in Washington.

Unmasking the true costs

In this manufacturing example, activity-based accounting assigns costs according to the actual processes involved rather than the traditional general categories

TRADITIONAL CHART OF ACCOUNTS	
Salaries	$600,000
Equipment	150,000
Travel	60,000
Supplies	40,000
Use/Occupancy	30,000
[illegible]	[illegible]

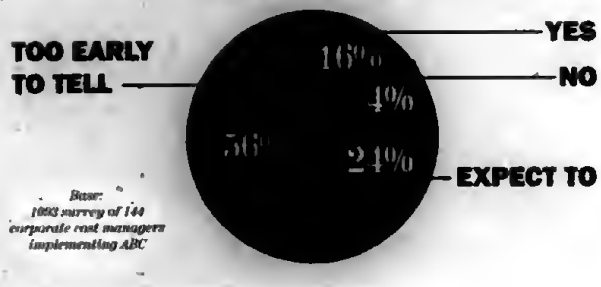
ACTIVITY BASED COSTING	
Create bill-of-materials	$ 31,500
Maintain bill-of-materials	121,000
Create routings	32,500
Maintain routings	101,500
Process special orders	83,000
Improve processes	45,000
Study capacities	119,000
Design tooling	145,500
Train employees	43,000
Administer department	158,000
[illegible]	[illegible]

Source: *An ABC Manager's Primer*, 1993

A 1993 survey of 400 members of the Institute of Management Accountants in Montvale, N.J., found that 36% were using ABC. But many of the respondents said it remains to be seen whether the benefits outweigh the costs of implementation.

Jury is still out

Has ABC management generated benefits greater than the cost of implementation?



Base: 1993 survey of 144 corporate cost managers implementing ABC

Source: Institute of Management Accountants, Montvale, N.J.

CRITICS SAY ABC IS OVERHYPED

Depending on who you talk to, ABC is either the savior of American business or a consultant-enriching buzzword that leads businesses to manage-by-numbers while neglecting the more important goals of customer service, innovation and international competitiveness.

Not only is ABC overhyped, but companies can get bogged down in data collection rather than getting real work done, says Germain Boer, professor of management at Vanderbilt University in Nashville.

And for all that effort, there is no guarantee that ABC's method of cost allocation is any more accurate than other methods. Boer complains that ABC artificially breaks expenses into tiny pieces to spread around to individual products, when in the real world those expenses are lump sums.

For example, if you hire a purchasing officer who is paid $40,000 a year, ABC spreads that salary over 1,000 purchase orders to arrive at $40 per purchase order.

"But I would argue that you'll pay $40,000 no matter whether they handle one or 2,000 purchase orders," Boer says.

Furthermore, ABC advocates tend to attribute anything good that happens at the company to ABC, Boer says, when the benefits probably came from re-engineering business processes.

"The consultants that sell ABC are helping companies not because of ABC but because they are doing process analysis," Boer says. "The costing is really a minor part of it." — *Mitch Betts*

▶ RESOURCES

For information on ABC management, the following are available:

- ABC Technologies, Inc., Portland, Ore. (503) 626-4895.
- Institute of Management Accountants (IMA), Montvale, N.J. (800) 638-4427.
- Cost Technology, Inc., Portland, Ore. (800) 368-COST.
- *An ABC Manager's Primer*, a book available from the IMA (above).
- Consortium for Advanced Manufacturing-International, Arlington, Texas (817) 860-1654.

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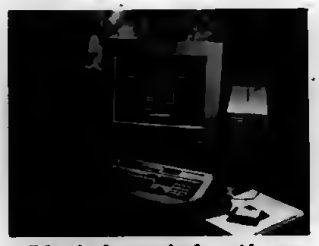

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David L. Reff

Replace thyself

If you are a CIO who came up through the IS ranks, the market is speaking to you. It's telling you to become your own successor, effective immediately. According to a recent survey in *Computerworld* [CW, March 14], 44% of more than 200 large companies think CIOs with a general business background can significantly outperform you.

"The business background gives them the ability to step outside of what they're doing [and] look at [information technology] objectively," says Microsoft Vice President Mike Brown, who oversees both finance and information technology for the industry leader. According to Brown, the days when CIOs could simply be responsive to "issues which have been framed for them by somebody else" are over. As an example, he points to Microsoft's new CIO Chris Gibbons, a management professional with a background in finance as well as IS.

So how can IS-bred CIOs give management what they want before it's too late?

Let's play pretend

Let's assume for a moment that you've been replaced. Armed with a broad business background and a global perspective, your successor will tackle your former job like a CEO brought in to effect a turnaround.

First, the new CIO will determine what changes must be made to ensure success for the company. How do we gain an edge on the competition? What are other IS organizations doing better, and how can we match or exceed that level of accomplishment?

Starting with an extensive review of corporate goals, both analytical (such as expense reductions and sales projections) and conceptual (such as employee morale and market position), the new CIO will take a proactive role in obtaining input from other top executives to learn how IS can help the company prosper.

> Identify what your successor would do and start doing those things yourself. In other words, become your company's *new* CIO.

MSA Chairman John Imlay once observed, "Everything to a CEO is staff." Your successor will view the CIO role in exactly the same fashion, balancing the abilities of a highly talented team to deliver results of exceptional quality.

To achieve this goal, they will conduct a dispassionate and ruthlessly objective evaluation of the senior information technology staff, the people who must ultimately be relied upon to get the job done. Are these the best people available in their particular specialties? If not, would upgrading personnel lower costs and/or yield higher quality results?

"Quality is critical," says Anderson Consulting's Bruce Turkstra. "It's quality of the management in the end that tells the difference."

It can be challenging to objectively evaluate the strengths and limitations of your staff. But recall the fate of the Dallas Cowboys at the end of the Tom Landry era. At his peak in the 1970s, Landry was considered the best head coach in the NFL. But in the 1980s, his stubborn determination to stick with outmoded players and strategies left "America's Team" the worst in the league.

Don't tempt fate

When new owner Jerry Jones came in, he ruffled feathers by abruptly firing Landry and replacing him with Jimmy Johnson. The result, however, was back-to-back Super Bowl victories a few years later. Of course, there are no guarantees that drafting first-round picks and delegating in earnest will translate into instant job security. However, not doing those things is a good way to tempt fate in today's do-or-die economy. So replace yourself now — before somebody else does it for you.

Identify what your successor would do and start doing those things yourself. In other words, become your company's *new* CIO. ■

Reff is president of the Dallas-based executive search firm David Reff & Co., which specializes in the recruitment of CIOs and their direct reports.

Intelligence Files

Putting resumes on-line

One of the world's largest outplacement firms, New York-based Drake Beam Morin, is raising the customer service ante for its industry by teaming up with Restrac (formerly MicroTrac Systems), a human resource systems vendor in Dedham, Mass.

Human resources managers with a Restrac Enterprise system will be able to search for job candidates in Drake Beam Morin's resume database from more than 500 large corporations and government agencies.

A spokesman for Restrac says the system gives corporations access to the world's largest database of executive and staff personnel in transition. Outplacement firms traditionally mail or fax lists of candidates to human resources departments.

Restrac's Charles Barwick, vice president of business development, says the new service could cause dramatic changes in the recruitment market.

He expects other companies will follow suit, creating "huge databases of detailed information on available candidates, accessible immediately by organizations with job openings, which can be searched swiftly and precisely. The result will be massive improvement in the time, quality and efficiency of candidate placement and an end to frustration and disappointment by both prospective employees and employers."

Lambert Schuyler, principle at Schuyler, Frye & Baker, Inc., an executive search firm in Atlanta, compliments the two companies on the alliance. "This is a logical extension of what the outplacement industry is doing," he says. "It is making information available to a potentially hiring company as easy as possible."

Schuyler says that while some outplacement firms offer access to their clients to any corporation, he doesn't know of any others that "are doing anything like this. It's pretty nifty."

Turner slashes staff: IS feels the pain

The Turner Corp. has slashed half of its 22-member information systems staff as part of a broad-based corporate layoff brought about by a $5.2 million loss in its fourth quarter last year.

Among those employees released by Turner, a $3 billion multinational construction company in New York, were John W. Good, director of information technology and systems support; John Cummings, senior software staffer; and Ralphie Mazzarella, senior operations manager. Many of the indirect IS support personnel in outlying departments and offices have also been laid off.

"They cut from all over the place but they cut first and hardest in IS," says one laid-off employee who asked not to be named. The former employee emphasizes that Turner has provided generous severance packages, including job placement help. The company set aside $8.2 million to cover restructuring costs.

"David [Firth] will have a tough chore to bring his people together," one former employee said, referring to the vice president of IS. "The people that are left are good people, but he's got to make sure they feel like there's a reason to stay. These are IS guys, and they're still fairly marketable."

Firth did not return phone calls to his office.

Turner IS was well-known for its successful 1991 completion of a client/server project that saw it move all its processing from a mainframe down to a LAN.

Internal sources say the company plans to handle much of its future IS needs through consultants.

Good, reached at his New Jersey home, was philosophical. "The company had as big, or possibly larger, a corporate staff as they did when they were doing a billion dollars more business, so the need [for layoffs] was not necessarily a surprise," he says. Good did say, however, that the quickness and severity of the layoffs came as something of a shock to the department.

The layoffs also follow the departure of Turner's top IS professional, Gary Thompson, who left in March. He was chairman of Turner's IS board, which set the company's technology direction. —*Michael Fitzgerald*

Giving customers the credit

JC Penney Co. gives its customers a lot of credit, but it wants to give even more. So the company plans to roll out a new one-minute credit card application system next month that would allow applications to be processed at every cash register in every store.

The new system speeds up what is essentially the same credit review procedure, says David V. Evans, director of information systems for the Dallas-based retailer. But the time savings is enormous, cutting down what traditionally has taken up to a week to process, to a minute.

"We'll be able to make credit decisions within 60 seconds at 4,500 cash registers nationwide," Evans says.

Evans says customers with JC Penney charge cards tend to spend more in the store than customers who don't have a card. So the goal is to get more cards in more hands. To do that, the company wants to make getting a charge card a snap at the time of making a purchase.

Account executives will still evaluate a customer's credit history and risk factor as they have in the past, Evans says. But the process of getting the customer profile to the account executive, accessing credit files and getting word back to the customer will be done in a fraction of the time it used to take.

JC Penney has been testing the software for the program for the past several weeks and, so far, Evans says "we don't anticipate any problems."

PeopleSoft began shipping client/server applications before most people knew client/server existed.

1989	1991	1992	1993
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		PeopleSoft Financials 1 ships	PeopleSoft Financials 2 ships

It's a track record that's hard to beat – especially when you consider that most application vendors are still new to client/server. They're still making promises, announcing plans or experimenting with client/server technology. They're simply not prepared to support you in a client/server production environment.

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That's why PeopleSoft client/server financial and human resource applications are the choice of 322 companies, worldwide. (As of January 1994.) With more signing up every day. Get the facts from our new white paper: *Client/Server Business Solutions*. For your free copy, and a schedule of our client/server seminars, please call 800/947-7753.

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Executive Track

Business Wire in San Francisco has promoted **Bill Roessler** to national systems supervisor. Roessler had previously been a programmer at the company.

Roessler, who is an Oracle-trained specialist in database system design and maintenance, administers Business Wire's technical issues, including research and development and product enhancement. He supervises a staff of four technical specialists and two consultants in New York and San Francisco. Roessler joined the wire service at its New York office in 1987 and transferred to San Francisco in 1991.

Neodata Services, Inc. in Louisville, Colo., has appointed **Paul Ricker** as chief information officer. Ricker will manage all aspects of technology and Neodata's upcoming transition to an open systems environment.

Prior to joining Neodata, Ricker was vice president of information systems at G. Heilman Brewing Co. where he directed that company's move into open systems and successfully re-engineered many of its business processes. He was previously based in Australia where he served as general manager of technology at Bond Corp. He has held other senior technology management positions worldwide.

International Gamn Technology (IGT) in Reno, Nev., has appointed **Don Miller Sr.** as vice president and CIO. Miller will oversee IGT's worldwide information management strategy, focusing on the company's international market expansion. Initially, he will direct the integration of the company's computers, networks and software programs into a data processing unit for IGT's worldwide facilities.

He will also direct IGT away from implementing its own software programs to buying and adapting leading-edge software to service the company as a whole.

Prior to joining IGT, Miller was most recently general manager of product test and reliability at IBM. His career at IBM spanned 30 years and included overseeing product development and directing IBM's West Coast IS operations.

MCA/Universal in Universal City, Calif., announced that several information services executives have been promoted as a result of expanded divisional responsibilities.

Jim Caldwell has been promoted to vice president of information processing services and strategic planning. He will continue to plan and implement processing efficiencies and operations cost reductions for the division and assume a greater role in information technology strategic planning. Prior to his appointment, Caldwell was director of information processing services.

Rob Grier has been appointed vice president of filmed entertainment group information services. He will be responsible for overseeing the planning, design and development of financial systems, executive information databases, tracking and billing systems and strategic applications. He will also now play a greater role in strategic planning. Prior to the appointment, Grier was IS director at the unit.

Nnubar Ghazarossian has been promoted to vice president of network and telecommunications services. He had previously been director of the unit. He will continue to manage MCA's worldwide local-area and wide-area telecommunications network and will now become more involved in the strategic planning of global applications and new technology research projects.

Lynn Jacobs has been promoted from associate director to director of motion picture and home entertainment information services, and **Dan Stanton** has been named director of information services operations. He was previously the associate director of information processing.

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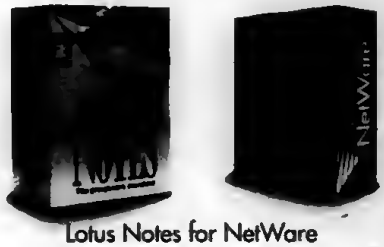

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Calendar

Managers offered leadership conference

Good project managers who aspire to be great leaders can attend a conference designed for them. A three-day Project Leadership Conference, to be held June 28-30 at the Drake Hotel in Chicago, will bring together leaders from development, consulting and user communities.

The conference will focus on issues of leadership, professional development and corporate growth in the context of project management. It will unite senior graduate school management faculty with leading consultants and users. Co-sponsors and participants will include ABT, Andersen Consulting, Deloitte & Touche, James Martin Associates, PMI and SEI.

The conference is geared toward chief information officers, vice presidents of application development and other senior information systems executives. The director of IS at United Airlines will discuss the rollout of the largest project in that airline's history — EMSYS or Engineering and Maintenance Systems — as well as scope management, the role of methodology and the implementation of a project office.

For information or to register, contact Sophia Zouras, Applied Business Technology Corp., New York, N.Y. (212) 219-8945.

JUNE 5-11

American Bankers Association National Operations and Automation Conference. San Francisco, June 5-8 — Topics: Imaging, PC networks, client/server, branch platform automation, re-engineering for new efficiencies, regulatory and compliance issues, retail delivery systems. Contact: Ed Alwood, American Bankers Association, Washington, D.C. (202) 663-5000.

Technologies '94. Fort Lauderdale, Fla., June 5-8 — Keynote speaker will be Anne Peter, president and CEO of Instruction Set, Inc. in Natick, Mass. Contact: Technologies '94, Fort Lauderdale, Fla. (301) 490-2056.

Third Annual Geographic Information System (GIS) in Business Conference & Exposition. San Francisco, June 5-8 — Contact: GIS World, Inc., Fort Collins, Colo. (303) 223-4848.

XDB Fifth Annual International User Conference. Annapolis, Md., June 5-8 — Focus: "Navigating Your Client/server Course." Contact: Michael Donner, XDB Systems, Inc., Laurel, Md. (800) 488-4948.

Ziff Institute's Interactive '94 Conference & Expo. San Jose, Calif., June 5-8 — Focus will be on technology, training, workplace support and corporate multimedia. Contact: Ziff Institute, Cambridge, Mass. (617) 252-5187

Technology Transfer and Other Joint Venture Opportunities in the New India. Washington, June 6-8 — Keynote speakers: Naresh Chandra, senior adviser to the prime minister government of India, N. Vittal, secretary of telecommunications in the Indian government. Contact: BDA, Inc., Washington, D.C. (800) 394-9390

Applied Machine Vision '94 Conference & Tabletop Expo. Minneapolis, June 6-9 — Sessions include algorithms, gauging, neural nets/fuzzy logic, web/textiles, several beginner and advanced tutorials and plant tours. Contact: Society of Manufacturing Engineers, Dearborn, Mich. (313) 271-1500

Object Expo. New York, June 6-10 — Sponsored by *Object Magazine, C++ Report, Journal of Object-oriented Programming* and "The Smalltalk Report." Contact: Mike Doolittle, SIGS Conferences, Inc., New York, N.Y. (212) 274-9135.

Usenix Association 1994 Summer Technical Conference. Boston, June 6-10 — Topics: Real-world applications, practical experience and the latest Unix research. Contact: Usenix Association, Berkeley, Calif. (510) 528-8649.

1994 Internal Customer Satisfaction Conference. New York, June 7-8 — Contact: The Conference Board, Inc., New York, N.Y. (212) 339-0345.

Imaging '94. Washington, June 7-9 — Theme: "How Imaging and Enabling Technologies Can Radically Change Our Jobs and Work Processes." Contact: J. Spargo & Associates, Fairfax, Va. (703) 631-6200

JUNE 12-18

Applied Dynamics International Users Society '94. Ann Arbor, Mich., June 12-15 — Contact: Applied Dynamics International, Ann Arbor, Mich. (313) 973-1300

The Third Annual Corporate Technical Recruiting Conference. Denver, June 12-15 — In conjunction with the 1994 Information Systems Educators Conference. Sponsored by *Computerworld*. Contact: Conference hot line, Framingham, Mass. (800) 488-9204

Society for Information Display. San Jose, Calif., June 12-17 — Display of technology, systems, products and applications. Contact: Mark Goldfarb, Palisades Institute for Research Services, Inc., Arlington, Va. (703) 486-7111

NetSec '94. San Francisco, June 13-15 — Contact: Computer Security Institute, San Francisco, Calif. (415) 905-2218

23rd Annual Meeting Windows of Opportunity. Reno, Nev., June 13-17 — Contact: M Technology Association, Silver Spring, Md. (301) 431-4070.

Advanced Speech Applications & Technologies '94 Conference & Exposition. San Jose, Calif., June 14-15 — This show is for professionals who use advanced speech technologies. Contact: Monique Bozeman, Interactive Technologies Group, Houston, Texas (713) 974-6637

Re-engineering Your IS Architecture: Client/Server & Network. Atlanta, June 14-16. Also showing in San Francisco on Aug 16-18, Toronto on Sept. 7-9 and Washington on Oct. 4-6 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880

SunWorld '94 Conference & Exposition. San Francisco, June 14-16 — Contact: Lynn Fullerton, IDG World Expo, Framingham, Mass. (508) 879-6700

New & Emerging Communications Technologies. Boston, June 16-17 — Topics: ATM, SMDS, frame relay, Sonet, mobile, cordless and FDDI II networks. Contact: International Institute for Learning, Inc., New York, N.Y. (212) 758-0103.

Art Teco '94. San Francisco, June 16-18 — Theme: Technical aspects of interactive development from interactive storytelling to cross-platform authoring tools. Contact: Tim Bigoness, Morph's Outpost on the Digital Frontier, Orinda, Calif. (510) 238-4547

Tutorial Week '94. Los Angeles, June 16-18 — Topics: "Using AI Techniques in Commercial Applications," "Internetworking LANs and WANs" and "Introduction to C++." Contact: Dave Oppenheim, Association for Computing Machinery, Los Angeles, Calif. (310) 476-4919.

CompuFest '94. Minneapolis, June 17-19 — Contact: National Association of Individual Investors, Royal Oak, Mich. (609) 778-0380.

JUNE 19-25

22nd EDPAA International Conference and Annual General Meeting. London, June 19-23 — Contact: Sara S. Patterson, EDP Auditors Association (708) 253-1545.

International Conference on Computer Architecture (ISCA) '95. Margherita Ligure, Italy, June 19-23 — Sponsored by the Association for Computing Machinery, Special Interest Group ARCH and IEEE-CS. Contact: Joseph Fisher, Hewlett-Packard Co., Palo Alto, Calif. (415) 857-5110

Object-Oriented Programming Using C++. Ann Arbor, Mich., June 20-21 — Two-day lecture and hands-on programming course featuring the basic ideas of object-oriented design and programming using C++. Contact: University of Michigan, Ann Arbor, Mich. (313) 764-8490.

A/E/C/ SYSTEMS '94. Washington, June 20-23 — Topics include, "Using Technology to Meet Federal Requirements/Regulations" and "The Computer-Effective Project Manager." Contact: Sharon Price, A/E/C/ Systems '94, Newington, Conn. (203) 665-0153.

"Computer Tools and Client Demands: New Methods for Architectual Practice." Washington, June 22 — Topics include: How should the process of delivering architectural services change in the face of new technologies? How are client needs driving changes in service delivery technologies? How can successful firms redesign technological processes without sacrificing the keys to successful practice? Contact: The American Institute of Architects, Washington, D.C. (202) 626-7300.

CrossTarget User Group Meeting. Burlington, Mass., June 22-23 — Contact: Amy Schenk, Dimensional Insight, Burlington, Mass. (617) 229-9111.

Re-engineering the Order-to-Delivery Cycle. Chicago, June 22-23 — Contact: International Quality & Productivity Center, Upper Montclair, N.J. (201) 783-4403.

Object-Oriented Analysis, Design and Databases. Ann Arbor, Mich., June 22-24 — An overview of the variety of engineering, scientific and business applications where the object-oriented approach is superior to the classical relational approach. Contact: University of Michigan, Ann Arbor, Mich. (313) 764-8490.

Re-engineering: The Implementation Perspective. Cambridge, Mass., June 22-24 — Michael Hammer from the Center for Re-engineering Leadership will provide an introduction to the concepts and objectives of re-engineering with an analysis of the business factors driving it. Contact: Hammer and Co., Cambridge, Mass. (617) 354-5555.

1994 International Summer Consumer Electronics Show. Chicago, June 23-25 — Contact: Electronic Industries Association, Washington, D.C. (202) 457-8700.

CreaTech & InterAd. New York, June 23-25 — Two-day conference focusing on advertising and marketing that use multimedia technology. Contact: Cynthia Upson, Electronic Industries Association, Washington, D.C. (202) 457-8728.

JUNE 26 - JULY 2

CAUSE Management Institute. Boulder, Colo., June 26-30 — Professional development program for managers of information technology in higher education. Contact: CAUSE, Boulder, Colo. (303) 449-4430.

RM25 The Relational DBMS Silver Anniversary Conference. Boston, June 28-30 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

JULY 10-16

1994 APPC/APPN Technical Conference. Boston, July 12-15 — Keynote speaker: Ellen Hancock, IBM's senior vice president of networking solutions. Contact: Technology Transfer Institute, Santa Monica, Calif. (310) 394-8305.

Fourth Annual NTIS/JICST Conference. Boston, July 14-15 — Theme: Japanese scientific and technical information. Contact: National Technical Information Service, Springfield, Va. (703) 487-4819.

JULY 17-23

The Premier Conference for Artificial Intelligence Applications on Wall Street and Worldwide. New York, July 20-21 — Focus: "Developing and Profiting from Advanced Technologies Trading and Asset Management." Contact: IBC USA Conferences, Inc., Southboro, Mass. (508) 481-6400

DIGITAL Update MAY 1994

TechAdvantage Software Gives You the Advantage

What can you expect from Digital's new TechAdvantage software family? Expect innovative software development solutions for the technical marketplace that are complete and easy to order. New individual TechAdvantage Software products include:

DEC Fortran 90 V1.0
A compiler for the new Fortran 90 language standard, DEC Fortran 90 V1.0 produces code for parallel Alpha AXP Farms and SMP systems as well as for scalar workstations and servers.

Digital Parallel Software Environment (PSE) V1.0
Digital PSE V1.0 provides the execution environment and tools that support DEC Fortran 90 for parallel application deployment.

Load Sharing Facility (LSF) V1.2
LSF V1.2 is third-party software sold by Digital that automatically distributes jobs to the least loaded system in a UNIX network.

In addition, the TechAdvantage Software family includes previously announced products such as DEC C++, DEC Fortran compilers, C Developers' Extensions Toolkit, DXML, KAP, DEC FUSE, and DEC FUSE for C++.

And now, with Digital's introduction of four new complete software packages, you can get all the technical software developer tools you need in a single kit. Today, developers can order one part number from Digital and receive the software tools needed to work in Fortran 90, FORTRAN 77, or C++ — and you can get it at a special limited-time low price.

AdvantageCluster Compute Servers Boast High Performance, Low Price, Scalability

The need is clear. If the majority of your business applications are based on technical computing — mechanical design, fluid flow analysis, stock portfolio optimization, or electrical design, to name just a few — you require increased computing power to run compute-intensive applications. And, you need that power at a price you can afford.

What's more, you need high-performance, well-balanced systems that are scalable, have low maintenance costs, and are easy to integrate into your installed environment.

A tall order? Not for Digital. Our AdvantageCluster compute servers — or workstation farms as they are commonly known — are a cost-effective alternative to mainframes and supercomputers for compute-intensive applications. The aggregate batch processing power of these servers will greatly improve the turnaround time on a mix of batch jobs. And because the server can act as a powerful, multipurpose parallel processing system, you can develop parallel programs and solve problems that were once out of reach.

In short, these high-performance networked Alpha AXP systems running the OSF/1 operating system will enable you to significantly improve productivity today and offer you an easy growth path to future generations of computing.

Systems Tailored to Meet Every Need

Digital provides four packaged systems that are tailored to meet your business requirements. All four are rack-mounted in a standard Digital enclosure — with a choice of Ethernet or GIGAswitch interconnect technology. In addition, we've further enhanced these systems by bundling in an extensive suite of software tools for batch and parallel processing, application development, application tuning, and overall network management.

We've also simplified the order process for your convenience. The entire family of AdvantageCluster compute servers, including all custom configurations, is configured, quoted, and priced as single part-number systems.

Our AdvantageCluster compute servers are a cost-effective alternative to mainframes and supercomputers for compute-intensive applications.

For more information on Digital's AdvantageCluster compute servers or TechAdvantage software packages,

CALL 1-800 DIGITAL
(1-800-344-4825) and reference JAA.

digital™

Is an Open Client/Server Environment Really Manageable?

Let Digital's POLYCENTER UNIX Portfolio Put You at Ease

Most industry analysts agree that the biggest single limitation to the widespread adoption of client/server technology is a lack of confidence in being able to manage it. And who can blame businesses for their discomfort? After all, managing a significant number of small distributed servers linked with PC clients is quite a bit different than managing one large mainframe. Indeed, the move to client/server computing presents many new and challenging system and network management requirements. Not to mention more than a few sleepless nights for your IS manager.

But now you can rest easy. Digital's full range of POLYCENTER UNIX products and services provides a complete open client/server management solution that makes your move to client/server computing as comfortable as possible.

A Management Solution That's 'Open' for Business

What does "open" computing mean to most businesses? It means choice — and choice is exactly what Digital offers. The proof is in the fact that 80 percent of the systems we manage for the UNIX environment — so our largest clients tell us — are non-Digital systems.

In terms of client/server management, Digital's commitment to open computing remains a priority. Based on international standards, our portfolio of POLYCENTER products and services consolidates and integrates management tools across multivendor systems and networks, including DEC OSF/1, ULTRIX, other UNIX variants (such as HP-UX, IBM AIX, and Sun environments), OpenVMS, IBM MVS, MS-DOS, Windows NT, and Macintosh.

Digital's POLYCENTER Manager on NetView is a prime example of the kind of open client/server management solution we're able to deliver. This comprehensive network management solution for open TCP/IP networks includes standard application programming interfaces (APIs) that provide a strong integration framework for independent software developers.

Other examples of Digital's UNIX management solutions include POLYCENTER Network Save and Restore for automatic backup and restoration of UNIX and PC files in a client/server environment; POLYCENTER FullSail for performance monitoring, and file and user account management for multiple UNIX variants; and POLYCENTER Advanced File System and Utilities for high availability through rapid reboot, on-line file-system resizing, and transaction logging for improved data integrity.

For more information on Digital's POLYCENTER UNIX products and services,

CALL 1-800 DIGITAL

(1-800-344-4825) and reference BZZ.

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VAX "Brick" Boosts Computing Power, Lowers Operating Costs

Whoever said that big things come in small packages must have been talking about Digital's VAX "Brick" — a 20-VUP (Relative Processor Performance × VAX-11/780) field-installable, in-cabinet upgrade that packs 4 to 8 times the performance of your current system in a single, compact box. And at a fraction of the cost per performance unit.

The VAX "Brick" — actually the nickname given to the VAX 4000 Model 50 upgrade — is a solid, affordable way to build powerful new systems while preserving and protecting your investment in cabinets and most I/O options. What's more, with on-board DSSI and SCSI controllers, this upgrade offers high-end storage functionality. And it's so easy to install. Just pull out your old CPU and memory and slide in the VAX "Brick."

Features include:

- 20-VUP NVAX based KA600 CPU with 256 KB backup cache
- Up to 128 MB of factory-installed SIMM memory
- Four DEC 423 asynchronous communications ports
- Two DSSI ports
- One SCSI port
- One ThinWire Ethernet port
- 512 KB of flash ROM

In addition, the VAX 4000 Model 50 has full power-up self-test and VAX 4000 console support. The cable-management system enables the mounting of the upgrade kit and all necessary cable and mechanical/electrical components in BA200 and BA430 series enclosures.

For more information or to order the new VAX "Brick," call

1-800-TEAM-CSS

(1-800-832-6277).

ORDERING IS FAST AND EASY

VAX 4000 Model 50 Upgrade Package

DESCRIPTION	ORDER NUMBER	LIST PRICE (A)
16 MB Memory Module	2T-V405A-A*	$16,692
32 MB Memory Module	2T-V405A-B*	$18,052
64 MB Memory Module	2T-V405A-C*	$20,772
128 MB Memory Module	2T-V405A-D*	$26,212

(A) Includes one-year foundation warranty "J"

*Complete the order number with the appropriate numerical code: 1=server, 2=five users, 3=ten users, 4=twenty users, 5=forty users, 6=unlimited users. User license of system ordered must be for the same number of users as current system license. Additional users may be added through appropriate standard licenses.

One-Year Standard Warranty "E"**

USER NUMBER	ADDITIONAL PRICE
Server	$3,169
Five Users	$3,267
Ten Users	$3,364
Twenty Users	$3,547
Forty Users	$3,925
Unlimited Users	$3,990

**If you choose a one-year standard warranty "E," add the appropriate cost listed above based on the user license level to upgrade package list price.

Note: Current CPU and memory must be returned. Operating system software must be at OpenVMS V5.2-2 or higher (except V6.0) prior to installation. OpenVMS V5.2-2H4 media is included in the upgrade package. The VAX 4000 Model 50 hardware installation is included in the standard warranty price. Software installation for upgrade to OpenVMS V5.5-2H4 is not included and must be quoted separately.

Cut Sun Service Costs

If you've never thought of Digital's high-quality support as an alternative to your Sun Spectrum service, consider this. We've been providing service for other vendors' equipment for more than a decade. Today, we support more multivendor environments than anyone else in the industry. In fact, we're servicing tens of thousands of Sun workstations for our customers right now.

SAVE 15%

We have a world-class team ready to provide you with direct, person-to-person support — for less than you're currently paying. And with our 15/15 Service Guarantee, you simply can't lose. Either we'll cut your maintenance costs by 15 percent, or we'll give you 15 percent off your next purchase of Digital hardware.

Fast, Efficient Problem Resolution

During the last 30 years, Digital has developed and refined a highly efficient call handling system and problem escalation process. Our global logistics system and state-of-the-art tools for predictive maintenance and remote diagnosis are considered industry benchmarks.

Our service engineers have the training and hands-on experience to resolve problems, not just with your Sun hardware and SunOS, but with most major Sun and third-party peripherals, storage devices, and networks. With our comprehensive problem/ solution databases and strong alliances with industry leaders like Microsoft, Banyan, and Novell, our team can solve even the most complex multivendor problems.

Flexible Service Options for Unique Service Needs

Whether you're running standalone workstations or a complex network, you want a service plan that matches your business need. That's why Digital offers a broad range of alternatives to Sun's Bronze, Silver, Gold, and Platinum service levels.

If you need round-the-clock coverage 365 days a year with guaranteed response times, we can provide it. If you prefer a do-it-yourself approach, we can support your staff with spares kits, diagnostic software, or carry-in repairs at any of our 150 U.S. SERVICenters. And if your situation lies somewhere in between, we've got you covered there as well.

Plus, Spare Parts When You Need Them

When a service engineer needs a spare part to get your system up and running, you don't want to hear any excuses. That's why we've invested millions of dollars in spare parts for your Sun equipment — and millions more in parts for the products of more than 1,300 other information technology vendors.

What's more, our logistics system, with over 1,000 inventory stocking locations, can deliver the parts you need anywhere in the world in 24 hours or less:

For information on Digital's limited-time Sun service offer, call

1-800-221-0162

and reference ext. 550.

A Guide to Groupware

Digital Helps You Find the Right Combination of Workgroup Business Solutions

ALL-IN-1, TeamLinks, and LinkWorks products — Digital's family of workgroup solutions — offer companies like yours the most complete range of groupware options available for solving business problems today. Working separately nr in tandem, Digital's groupware product suite gives you maximum choice, flexibility, and productivity. Some of you, however, may still be wondering which groupware nptions are right for you. Here, we offer a handy guide to help with your decision-making process.

ALL-IN-1 — Added Value for Current Users

Your investment is safe and getting better. ALL-IN-1 IOS is still the best integration framework for a host-served network of video terminals. Running on the OpenVMS platform, it gives users instant access to their personal and groupware applications and custom business solutions. Best of all, you can depend on Digital's ALL-IN-1 solution to continue meeting your needs for years to come — with even greater performance as our new OpenVMS Alpha AXP system becomes available. And now that an ALL-IN-1 system is a server to TeamLinks clients, you can enhance it with other groupware products.

For FREE TeamLinks and LinkWorks demo diskettes,

CALL 1-800 DIGITAL

(1-800-344-4825) and reference BZA.

TeamLinks — The Low-Cost Client/Server Solution

Get the most from your PC and Macintosh systems with TeamLinks, Digital's suite of groupware applications. TeamLinks products integrate PC and Macintosh systems into the ALL-IN-1 family. Easy to use right off-the-shelf, TeamLinks software provides mail, routing, conferencing, scheduling, and filing services for groups ranging from small teams to your entire enterprise. The heart of the TeamLinks application is TeamLinks Mail V2.0, enabling an ALL-IN-1 system to move to client/server. With an ALL-IN-1 system as the mail server, TeamLinks software lets Microsoft Windows and Macintosh clients exchange mail with other ALL-IN-1 video terminal clients. And users can keep their favorite software applications. What's more, with MAILworks for OpenVMS and OSF/1, TeamLinks software is also the right groupware application suite for sites that are not on the ALL-IN-1 system. The best news? At just $49 per client, TeamLinks Mail is a bargain.

LinkWorks — Our Next-Generation Integration Framework

Digital's LinkWorks product is the open, client/server framework for organizations needing maximum integration among desktops, workgroups, corporate systems, and production systems. Designed for custom business solutions, LinkWorks software helps you reengineer your company. Its revolutionary, object-oriented approach lets you weave all the applications that your users know and prefer into an integrated enterprise-wide information system. LinkWorks software lets users encapsulate applications and processes under familiar, object-oriented "icons," so they can readily share documents, drawings, spreadsheets, databases, and more. For mail communications, the LinkWorks solution integrates several popular mail systems, such as TeamLinks Mail. This pioneering approach maximizes productivity, creates a completely open application environment that streamlines workflow, and restores real security to client/server systems.

LinkWorks won the Best of Show award from *BYTE* magazine at the 1993 Fall COMDEX for software connectivity. In addition, LinkWorks won the Best Software for Europe Gold Award at CeBIT's '94 Fair, Europe's largest technology event.

The LinkWorks solution supports TCP/IP and DECnet protocols; relational databases such as INGRES, ORACLE, INFORMIX, and DEC Rdb databases; and connection tn X.400 networks.

GROUPWARE AT A GLANCE

PRODUCT	CLIENT	SERVER	[illegible]
ALL-IN-1	Terminals	OpenVMS	Integrated office system in a time-sharing environment. Expandable to client/server.
TeamLinks	PC or Macintosh	OpenVMS and OSF/1 AXP	A suite of messaging and groupware applications for the client/server environment.
LinkWorks	MS Windows, Macintosh, Motif, OS/2, Presentation Manager	OpenVMS VAX, OpenVMS AXP, OSF/1 AXP, ULTRIX, SCO UNIX, HP-UX*, and IBM AIX*	An object-oriented client/server framework for integrating desktop, shared programs, and production applications.

*Available from Digital Operating Regions.

The DEC 3000 Model 300LX AXP Workstation

Rock-Solid Performance at a Rock-Bottom Price

There was a time when the terms "64-bit computing" and "affordable" did not go hand in hand. Now that time has passed. Introducing the DEC 3000 Model 300LX AXP — Digital's lowest-cost AXP workstation — offering better performance than the competition and providing you with a cost-effective entry path into the world of AXP 64-bit computing. How cost-effective? Right around $5,000 — lower than any other workstation in its class. What's more, this system offers excellent expansion capabilities in a compact desktop design.

Well-suited for both commercial and technical applications such as desktop publishing and software development, the DEC 3000 Model 300LX AXP features:

- 1280 × 1024 video resolution and integral 2D graphics accelerator standard on each system
- Support for up to 256 Mbytes of memory
- A SCSI-2 controller that supports up to seven devices
- On-board Ethernet, ISDN, and audio in/out
- Two TURBOchannel slots for the addition of network, storage, and graphics capabilities

What's more, Digital stands behind this entry-level Alpha AXP workstation with a 60-day money-back guarantee — no questions asked. So what are you waiting for? Let the DEC 3000 Model 300LX AXP workstation hand you the future of 64-bit computing today.

For information on the DEC 3000 Model 300LX AXP workstation or any of Digital's industry-leading workstation and server products,

CALL 1-800 DIGITAL

(1-800-344-4825) and reference JAF.

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The SAS System and Alpha AXP Technology Add Speed to Information Delivery at Miles, Inc.

When the Diagnostics Division of Miles, Inc. began looking for ways to speed up quality assurance (QA) testing for new laboratory products, they decided to investigate Alpha AXP systems.

The Division's existing information delivery software, the SAS System running on a VAX 6000-320 computer, provided them with excellent support for the extensive data analysis that Miles uses for its medical products. "But," explains system manager Mark Faust, "we wanted to see if we could add more performance to the system and help our scientists get analysis done faster."

Quick data analysis gives Miles a competitive advantage by shortening product development and manufacturing cycles. Alpha AXP systems sounded good — especially with Digital's promise that "OpenVMS is OpenVMS." But would everything really work together seamlessly in Miles' rigorous product testing environment? The Division decided to find out.

The SAS System is used by the Division both during a product's R&D cycle and during QA checks prior to manufacturing release. In either case, the process is similar. After collecting test data on the new equipment, results are sent to the SAS System, where they can be analyzed and reported on.

A Seamless Transition to Higher Performance

For the switch to Alpha AXP technology, the Diagnostics Division acquired a DEC 3000 Model 400S AXP server. Faust found that it took "very little work" to move applications and data from the VAX system to the Alpha AXP system. "We were hoping that when Digital and SAS said 'OpenVMS is OpenVMS' they really meant it. When we got our Alpha AXP system, we found out it was true."

In addition, the SAS System for OpenVMS on the Alpha AXP platform looked and worked the same way as it had on the VAX system. According to Faust, "For the end-user scientists who moved to the Alpha AXP system, there was no change in their environment — except that suddenly it was a lot faster." They consistently found improvements of 400 to 500 percent over the previous environment.

By taking their existing software environment and moving it to the compatible but higher-performing Alpha AXP platform, Miles has increased the productivity of individual scientists by as much as five times without the need for retraining. The company has also improved its competitive advantage by shortening time-to-market — all without the need to make changes to its existing investment in the SAS System for information delivery.

For the future, Faust plans to move the laboratory information database, containing millions of records, from the VAX system to the Alpha AXP system. He is confident, he says, that the Alpha AXP system can handle the data storage and management as well as the analysis.

For more information about Digital and SAS System solutions, call Stacy Hobson, SAS Institute Inc., at

919-677-8000

and reference ext. 6224.

"For the end-user scientists who moved to the Alpha AXP system, there was no change in their environment — except that suddenly it was a lot faster."

Mark Faust
System Manager
Miles, Inc.

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Windows Application Integration

HAVE IT OUR WAY

Borland, Lotus, Microsoft and WordPerfect have their own ideas about application integration. Our Buyers' Satisfaction Scorecard rates the office application suites from these vendors in a 150-user survey. Page 124

WHAT OLE CAN DO FOR YOU

Microsoft's OLE 2.0 may offer more (and less) than you think for connecting your Windows applications. The goal is to make everything easier to use. Senior editor Stuart J. Johnston explains it all. Page 124

HAVE IT YOUR WAY

Visual Basic is Microsoft's strongest use of OLE in a programming environment to date. Firing Line takes a look at how well Visual Basic works in the field and whether users think it meets their needs. Page 128

WINDOWS WORLD FINALISTS

More than 20 IS organizations have been selected by a panel of expert judges for the Windows World Awards, held in conjunction with Comdex in Atlanta today through Thursday. We profile the leading applications. Page 136

Who's In Charge Here?

If you had *SOLVE*™... you'd be.

Because *SOLVE* gives you a clear picture of your entire information systems operations. And with that, you can manage your most vital services in ways you never thought possible.

SOLVE is a fully-integrated software package that lets you prioritize information according to your own business requirements. That means you always know exactly which problem to fix first.

And because you get complete and precise information about your systems operations and administration, *SOLVE* makes it easier for you to make educated business choices.

You can reliably predict the results of change, the worth of your assets, or simply examine how decisions might affect service levels and system investments. In other words, you can have solutions before you ever have the problems.

So no matter how chaotic it gets around your office, make sure you're always in control. Call Chris Williams at **1-800-264-0332**, and let *SOLVE* make all your IS decisions a whole lot easier.

STERLING SOFTWARE

Systems Management Division

MAKING SENSE OF OLE

BY STEVE JOHNSTON

ABOUT FOUR YEARS AGO, VENDORS BEGAN INTRODUCING A new language. Terms such as objects, document-centric computing, componentized applications, in-situ editing and global scripting languages were being used to describe Windows tools and applications.

For the vendors, the terms mean unique technical concepts that allow them to accomplish amazing things with their software. For information systems organizations and users, they translate into one simple idea: better ease of use.

The leading proponents of this new approach to ease of use are Microsoft Corp., Borland International, Inc. and IBM, among others. While there are many aspects to this new future, one area — end-user computing — has emerged as the biggest battleground.

Humanized applications

The vision of OLE is that now and in the future, users will be able to use computers in a more human-oriented manner. Rather than bending themselves to work the way the computer requires, users will be able to work more like they do in the real world.

Though the leading vendors are making many claims and offering various strategies, at the front of the pack right now is Microsoft with its Object Linking and Embedding (OLE) technology.

In the real world, if you want to make a note to yourself, you pick up a pencil and a notepad and scribble a note. In the computer realm, the user must start up the word processor, choose "create a new file" from a menu and begin typing.

The first example, the reasoning goes, is natural and intuitive, while the second requires a lot of education and knowledge just to get to the point of writing the note.

So the point is to make using a computer more object-oriented, and therefore, simpler to learn and use.

Extending this analogy and taking the evolutionary approach from today's so-called "monolithic" applications, Microsoft has developed the concept of "container" applications.

If a word processor is the host, a user could choose to use an "object" application inside of it, such as a charting program or a spell checker from a third-party vendor.

There are other promised benefits as well.

Live links

A user could create a spreadsheet, for example, in Microsoft's Excel and have it generate a chart. The user could then "paste-link" that chart into a Microsoft Word document. In this fashion, the chart would be active, meaning if the user changed the figures in the original spreadsheet, the chart would be changed in the Word document. This feature is the "linking" in OLE.

Not only that, but if the user double-clicks on the chart in the Word document, OLE is smart enough to automatically open the original file in Excel so the chart can be edited. With OLE 2.0, the user does not even necessarily notice that he is no longer using Word but is using Excel because the menus and tool bar change but the overall look and feel remain the same. This is called "in-place" or "in-situ" editing.

If the user wanted to send a copy of the document to another user via a floppy disk or electronic mail, the receiving user could also see the chart without having the original spreadsheet. This OLE embedding technique creates a copy of the original chart and includes it as part of the document.

Applications with containers

The container concept adds capability to an application. Instead of serving only its primary function, the container application has several special features, one of which is that it can serve as a host that enables other applications to run inside of it as if they were part of the main application.

Another major feature of OLE

SUITE STUFF

Users say that Lotus' SmartSuite and Microsoft's Office stack up well

BY [illegible]

The battle for suite supremacy is raging full tilt, and users say the contenders are closely matched. Lotus Development Corp.'s SmartSuite and Microsoft Corp.'s Office suite tied for first place in overall user satisfaction in the Buyers' Satisfaction Scorecard. Borland International, Inc.'s Office package placed third.

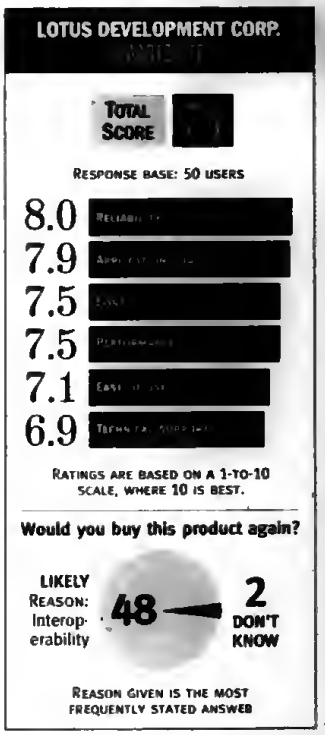
In terms of overall integration, Microsoft's Office earned the highest satisfaction for its ability to move data and graphics among different applications and for the consistency of the program's interfaces. Microsoft's applications feature almost complete support for Object Linking and Embedding (OLE) 2.0 technology.

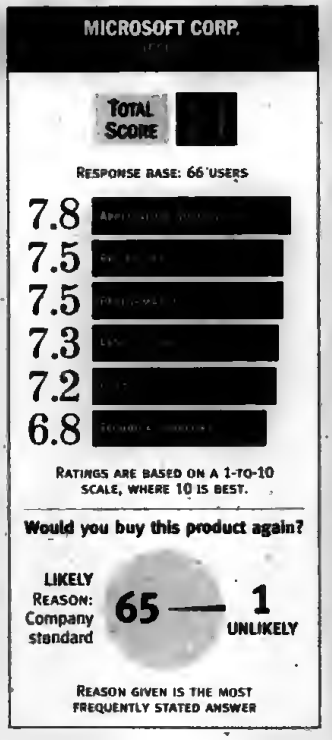
SmartSuite countered those strengths with high survey ratings in overall reliability, the most important single category.

All three suites incorporate a spreadsheet, a word processor and a database, but their approaches diverge after that. Lotus tosses in Freelance Graphics and Organizer; Microsoft incorporates PowerPoint and a client license for Mail. Borland relies on spreadsheet Quattro Pro's graphics for presentations and prices its suite lower than the other two.

Looking for Mr. Tool bar

In marketing suites, Lotus trumpets its "smart icons" interface tool bars, which have been incorporated into all the applications in SmartSuite, providing a common look and feel. Microsoft pushes its ability to move data and graphics among programs based on technologies such as Dynamic Data Ex-





2.0 is the ability to use a common scripting language that works between applications. Such a scripting language could be used for automating complex tasks and forwarding results to other applications, even scheduling them to execute at predetermined times or when certain conditions are met.

For this application automation feature to work, however, several key components must be in place.

Each application must be OLE 2.0-enabled to support the above features as well as expose their own internal "objects" to the outside world. That is, various capabilities within the application must be "registered" with Windows' registry database, a systems-level database that contains a record of what features are callable within the OLE-enabled application. These internal application objects are registered when the application is installed under Windows.

Microsoft last year published a specification that allows any software developer to write its own scripting language, and several vendors have their own languages in the works.

Last fall, Microsoft shipped the first global scripting language, Visual Basic Applications Edition, in Excel 5.0.

With it, users can write macro programs that will automate functions across the company's entire Office suite of applications. These include Word, Excel, the PowerPoint presentation graphics package, its Project management system, and the Access database, all of which support all or most of the OLE 2.0 functions in their latest editions.

Embedded information

The user could also choose to "embed" a chart in a Word document. In that case, the chart is static – it does not change when the original spreadsheet is changed because the two are not linked.

These added functions are apparently a bit with users of Microsoft's Office suite package, which received the highest ratings for ease of use and linking features in our Buyers' Satisfaction Scorecard rating of office suites from Microsoft, Borland and Lotus Development Corp. (see page 124).

Although so far only Excel and Project have complete implementations of Visual Basic Applications Edition, Access has a near-complete implementation and full versions are planned for the other applications, company officials say.

Micro Modeling, a Microsoft Solutions Provider with offices in New York, is a good example of real-world use of OLE. The company does ongoing consulting for more than 50 Fortune 1,000 companies primarily using Microsoft products, including the Office applications suite and Visual Basic Applications Edition.

"We created a budget system for one customer where you have a Visual Basic front end pulling budget information into Excel from a SQL Server database," says Andrew Mehring, a managing director and co-founder of Micro Modeling.

"We're able to launch Excel, build a budget spreadsheet and populate it with information from SQL Server. We also have a linkage with Word where we can take summary data and put it into a Word" document, Mehring says. He cited OLE 2.0's application automation as a major benefit for his customers because "the ability to integrate the applications is much greater" than before.

In the area of promulgating object standards, Microsoft is living proof of the so-called "golden rule" — the one with the "gold" gets to make the "rules."

Microsoft officials say 230 applications now support OLE, although almost all of them support only Version 1.0.

In fact, the company has touted the OLE object add-in market as a waiting gold mine for third-party developers in the future.

All Microsoft wants is to be the single-largest vendor of "container" applications, besides being the vendor of the operating systems that can track, store and retrieve objects.

OLE appears destined for vast popularity, which is key to Microsoft's plans for ever-expanding hegemony over the computer software industry.

Bowing to reality

Even many of Microsoft's toughest rivals, including Lotus and WordPerfect Corp., are hard at work implementing OLE in their applications — and, of course, they want to own their own chunks of the container applications market.

Hoping to be one of the first to cash in on the expected gold rush for object add-ins, Seattle-based Shapeware Corp. recently began shipping Visio Express for Microsoft Office, the first OLE 2.0-enabled object add-in. The package provides a version of the company's business drawing package designed specifically to be hosted inside of Microsoft Office applications.

Reading from the same script

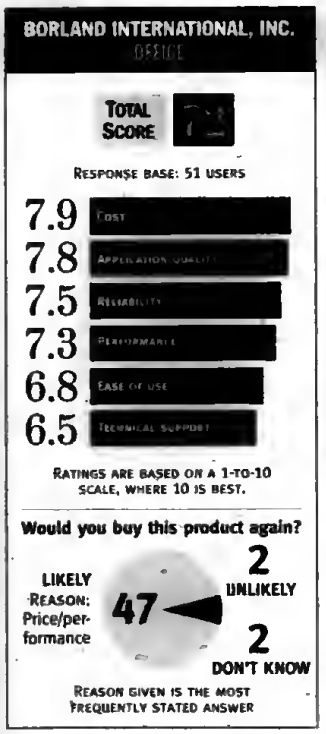
Nothing works without a means of calling internal application objects. This capability is provided by a global scripting language that can work between and inside of compliant applications.

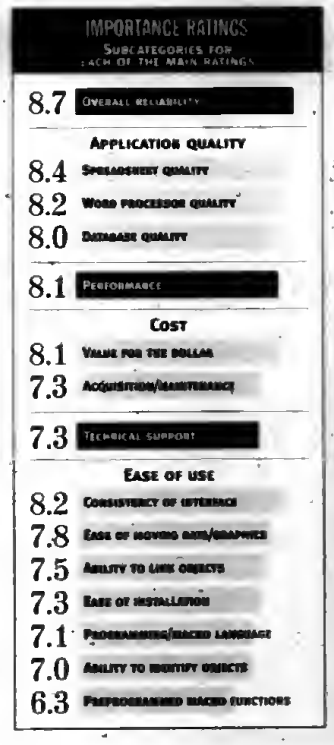
Microsoft has also recently extended special programmable objects, called Visual Basic Custom Controls, or VBXs, to simplify implementation of OLE in third-party products.

These new hybrids, which also let developers call them from other languages besides Visual Basic, are called OLE Custom Controls, or OCXs.

Introduced when Visual Basic was rolled out about three years ago, VBXs have turned into a thriving third-party market. Independent software vendors

Making sense, *page 128*





change and its successor, OLE. Borland's strategy has been to tout its applications as "best of breed" instead of trying to compete on the basis of integration, where the single-vendor suites have had a development advantage.

However, of the Borland Office applications, only Paradox bested its competitors (Access and Approach) in user satisfaction. Borland's inability to outshine the other applications on an individual basis dropped Borland's Office to third place overall.

The areas where Borland's Office did shine were value for the dollar and cost of acquisition and maintenance. The product costs $595, compared with $750 for SmartSuite and $900 for Microsoft's Office including the Access database. A stripped-down version of Microsoft's suite, minus Access, costs $750.

Lotus' 1-2-3 was the most satisfactory spreadsheet, beating Microsoft's Excel and Borland's Quattro Pro. Microsoft's Word for Windows earned the highest marks among word processors, ahead of Lotus' Ami Pro and WordPerfect Corp.'s WordPerfect, which is in Borland Office.

In a separate question (not included in the overall scores because Borland's package does not include a fully comparable application), Lotus' Freelance Graphics earned comfortably higher satisfaction grades than Microsoft's PowerPoint.

Another set of questions dealt with the frequency with which respondents use the applications included in the suites. Relatively few users said they consistently use all the products.

Spreadsheets most important

Users rated the spreadsheet component as the most important application, and 74% of the respondents indicated that they use that portion of their suite. The word processor followed closely at 67%. The other applications proved less crucial. Forty-two percent overall said they use the database product, including 61% of the Borland Office respondents. Roughly half of the Lotus and Microsoft users said they use the presentation packages in their suites. Only a third of the Lotus respondents use Organizer, and a third of the Microsoft Office users employ the Microsoft Mail client license.

Most user requests for improvements to the suites centered around the compatibility and interoperability of the applications, although the need for greater speed was also noted. ■

Slater is assistant editor, features.

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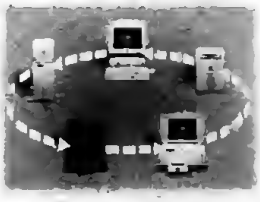

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MAKING SENSE OF OLE

CONTINUED FROM PAGE 125

now sell more than 500 VBXs, from complex communications and graphics routines to miniature spreadsheets that can be dropped into Visual Basic programs for use in writing other products.

Microsoft officials and many third-party developers hailed OCXs as another step in the right direction — Objects ho!

In the future, the object metaphor will become even more powerful because the model will be extended to include information stored in object form instead of in files as it is today.

The key to this future is a new version of Windows NT, the company's server and high-end desktop operating system, which is currently code-named Cairo. Cairo, which has now slipped to delivery in the second half of 1995, will boast a distributed version of OLE as well as an Object File System.

Although the company has recently gone mum on discussing Cairo in detail, these two features promise to provide several necessary functions if OLE is to work safely over networks.

It is possible today to use OLE over a network, but there are problems with the implementation that keep most people from doing so.

Expect complications

To extend the earlier example, let's say that User 1 has a spreadsheet that User 2 has paste-linked into a Word document over the network. That word document just happens to be a proposal that uses the spreadsheet's figures to justify a particular bid.

Now, let's say that as User 2 is about to print the proposal for final delivery, User 1, who has forgotten about the link, decides to play what-if games with the spreadsheet and doubles the figures. If User 2 is not paying attention, User 1's oversight could turn into a costly error.

Or what if User 1 is cleaning old files off a cramped hard disk and decides to delete the spreadsheet file by mistake? Without warning, the link would be broken, with concomitant consequences for the proposal.

Objects are the future

Documents will be composed of groupings of objects rather than being single files. These information objects will have attributes that will allow them to be located easily. Additionally, these information and application objects will exist and operate over enterprisewide networks.

Versioning and tracking, as well as security for objects, will be provided by distributed OLE and the Object File System under Cairo, Microsoft officials say.

However, no new technology is without its detractors, and OLE is no exception.

Foremost among the gripes of OLE detractors is that OLE is not the most ambitious approach to objects. Indeed, Microsoft officials readily admit it is an evolutionary, rather than a revolutionary, approach to establishing objects as the new applications standard.

Instead of trying to do everything at once, OLE begins small, providing linking and embedding services to the single user with multiple applications. It will eventually expand to handle distributed objects linked over networks when Microsoft delivers Cairo during the second half of 1995.

Of course, OLE has competitors as well, and perhaps the most significant is OpenDoc.

OpenDoc promises to work across many competing vendors' systems, including Windows, OS/2, WorkPlace OS, the Macintosh, NetWare and Taligent, as well as Unix.

In addition to Windows, Microsoft plans to come up with an OLE version for implementation on the Macintosh. Digital Equipment Corp. announced last fall that it would provide facilities to allow OLE to interoperate with its operating systems, and Microsoft has licensed two other companies to port it to various versions of Unix.

OpenDoc will arrive in final form later this year for Windows, the Macintosh and OS/2 — at least six months earlier than Cairo due to the slip in the latter's schedule. In addition, OpenDoc was architected from its inception with distributed networking in mind, according to officials at the OpenDoc consortium's Component Integration Laboratories.

OpenDoc was also designed at the outset to provide cross-platform communications between objects.

However, with more than 200 applications already supporting OLE Version 1.0, including Lotus' Notes, the momentum seems to be building behind OLE.

What version?

Today, OLE does not provide versioning, link tracking or deletion warnings, all of which Cairo will provide.

Hard-bitten competitors of Microsoft have not missed that point either. Lotus and WordPerfect are hard at work trying to roll OLE 2.0 capabilities into all of their applications, despite the fact that they also intend to eventually add OpenDoc support.

Lotus' position is that OLE represents a great concept, but its implementations by Microsoft have some functional defi-

Making sense, *page 132*

VISUAL BASIC 3.0

Users applaud integration capability

- *Evaluators said Microsoft Corp.'s Visual Basic 3.0 offers a reliable and manageable programming environment for business applications.*
- *The evaluators also said that technical support from third parties and Microsoft could stand improvement and that performance lagged on current hardware.*

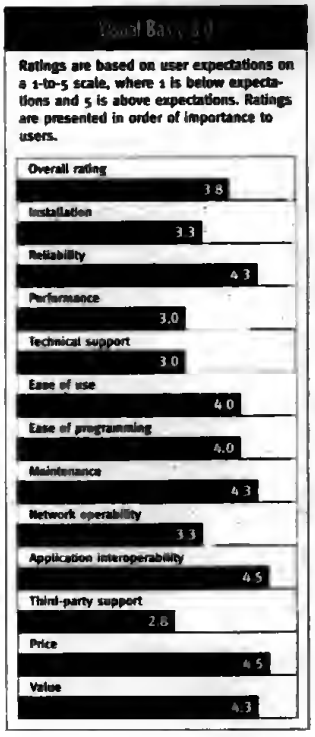
FIRING LINE

Visual Basic 3.0 Professional Edition is a full-fledged programming environment with client support for Microsoft's Object Linking and Embedding (OLE) 2.0 specification. As such, Visual Basic can be used to create front ends to other OLE server applications such as Microsoft's Word 6.0 or Excel 5.0.

Visual Basic provides this capability through the MSOLE2.VBX Custom Control. Custom Controls are Visual Basic extensions that generally include a visual programming component and parameters (or properties) that can be changed during development or runtime.

Users assisting in this survey included technical and management personnel from a regional bank, a ground transportation firm, a medical equipment manufacturer and a business consultancy.

The format for this evaluation was developed with assistance from Howard Rubin Associates and Technology Investment Strategies Corp.



Installation

Installation of the Visual Basic development environment posed few problems, the evaluators said. Preparing end-user systems to run OLE-enabled Visual Basic applications required some initial preparation time, the evaluators said.

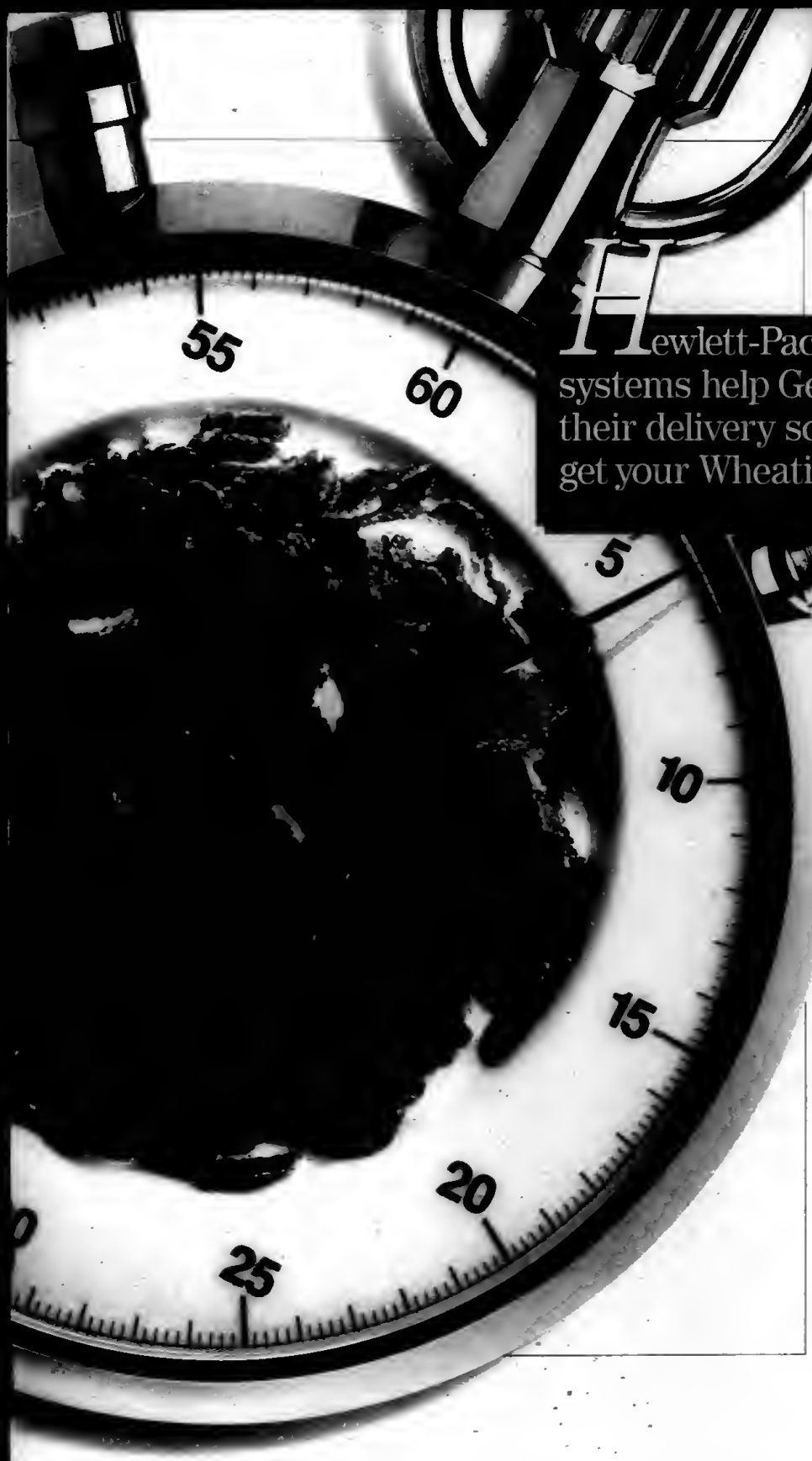
Consultancy: "You have to make sure that end users have all of the [Dynamic Link Libraries] needed for OLE applications."

Performance

Performance of Visual Basic applications enabled for OLE was marginal, the evaluators said. Even when running on fast 486 systems, OLE applications built with Visual Basic taxed hardware resources.

Bank: "It's not fast, but we knew that when we decided to use it. It will get better."

Visual Basic, *page 132*



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– Mike Menz,
General Mills, Information Systems

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Plug and Play is the result of some very fresh thinking in both hardware and software – an accomplishment that tapped the combined engineering expertise of both companies. Together, Compaq® computers and the next version of the Microsoft® Windows™ operating system (code-named Chicago) will deliver the long-promised benefits of true Plug and Play: easy setup, easy expansion and easy connection to peripherals.

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Even today, Compaq is shipping computers that will take full advantage of Plug and Play technology as soon as the forthcoming version of Windows is available. So the Compaq & Windows combination will quickly become the standard for Plug and Play computing. A welcome reassurance for people who buy computers.

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MAKING SENSE OF OLE

CONTINUED FROM PAGE 128

ciencies. The company views its Notes groupware application as "the ultimate container" application.

Specific areas where Lotus finds fault with OLE include the following:

Object granularity — The company argues that early implementations of OLE 2.0 define the object as the file, which incrementally increases the file size. Also, embedded objects when taken from the same file are not necessarily linked dynamically to one another.

System resource usage — Lotus argues that system resources of 4M bytes or less are too low to allow drag-and-drop embedding and visual editing. Even 12M-byte systems quickly hit a ceiling with significant-size files, the company says. Embedding several objects in a file dramatically increases storage requirements.

Performance — Launching server objects for OLE 2.0 can exceed 15 to 20 seconds, which Lotus contends is more than users will patiently tolerate.

Lack of a universal object model — OLE 2.0 is not yet a cross-platform product, which limits its functionality in mixed Windows and IBM OS/2 environments.

The bottom line for Lotus is it believes it can offer a superior implementation of OLE, especially when combined with Notes. The company is working on such an implementation, while also supporting OpenDoc.

The case for OpenDoc

OpenDoc, a technology being jointly developed by Apple Computer, Inc., IBM, WordPerfect Corp., Taligent, Inc., Novell, Inc., Sun Microsystems, Inc. and others, promises to do all OLE can do and more.

With major office suite vendors endorsing the "container application" concept, users and third-party software makers may soon face more limited choices in their office application purchases [CW, May 16].

Built for suites

Add-in packages that are built for compatibility with OLE-based office suites are less interchangeable among different applications.

The add-ins must be designed to look like the package they work with. Therefore, add-in vendors will have to design one version for Microsoft's containers and another for Lotus' and another for the next vendor, etc.

Users will benefit from the ease of use of consistent interfaces, but application functionality might suffer. Vendors will compete on how their applications look rather than on breadth of functions.

After years of dealing with applications of growing complexity and packed with more features than many users can get their hands around, competition and enhancements based on ease of use, such as OLE, may be a welcome relief to the training and support budgets of IS organizations. ■

Johnston is *Computerworld*'s senior correspondent, Pacific Northwest.

OLE GLOSSARY

APPLICATION AUTOMATION: This concept allows a global scripting language to execute tasks within an enabled application or between enabled applications. For this to work, the application must be written to "expose" its internal objects or functions, which are registered in Windows' registry database at installation.

COMPOUND DOCUMENT: This is a standard document that contains information created natively within it, such as text in a word processor, plus information created by other programs and embedded or paste-linked into the document.

LINKING: A piece of "active" information can be "paste-linked" into a compound document. This information will change in the compound document as the source information changes in the application that created it.

IN-SITU EDITING: Also called "in-place" editing, this feature lets applications pop up inside an OLE-enabled container application and allows the user to continue working as if the second application's features were part of the functions of the container application. Ideally, only the container application's title bar, tool bar and menu selections would change.

VISUAL BASIC 3.0

CONTINUED FROM PAGE 128

Technical support

Microsoft and third parties offer a variety of technical support options, and the evaluators used a number of these, including CompuServe and Usenet conferences on Visual Basic, third-party training firms and consultants and books and magazines. The evaluators agreed they still ran into difficult technical issues.

Ease of use

The evaluators said learning Visual Basic and its OLE controls was substantially easier than using C or C++. Developers became productive within weeks. They said most difficulties were merely part of the learning curve.

Consultancy: "OLE opens a huge can of worms. It's just our education."

Ease of programming

The Visual Basic programming and design environment was popular with the evaluators. They said the editing and debugging facilities were easy to use and were well-integrated. Visual Basic's object-oriented approach posed initial difficulties for programmers, but the problems were readily solved.

Bank: "Changes [in programs] are easier to make than we expected. But there are the same analysis and design constraints that you would have with Cobol or any other language."

Maintenance

The evaluators agreed that it was easy to make changes and update most Visual Basic programs. However, they want built-in version control to handle larger or complex programming tasks.

Network operability

Visual Basic does not support networking beyond that provided by Windows, DOS and underlying networking software, the evaluators said. They expressed some frustration that OLE does not have any specific networking routines since many links are made across networks.

Transportation firm: OLE "is good for smaller installations, but if you're growing into something much bigger, it's not safe."

Application interoperability

OLE and Visual Basic were rated highly by the evaluators as integration tools. They said they were able to create Visual Basic front ends to information systems using the tools, and these functioned adequately on single-user systems.

Medical manufacturer: "The ability to integrate Excel and Word is fantastic. That's why we went with it."

Price

With royalty-free distribution of applications, the evaluators said Visual Basic was very fairly priced. All paid approximately $300 for the Visual Basic Professional Edition.

Value

Users said few products provided the combined ease of use, versatility and general usefulness found in Visual Basic. ■

Written by Computerworld *senior editor Garry Ray*

Microsoft responds

Microsoft product manager Deedee Walsh responded to issues raised in this evaluation.

TECHNICAL SUPPORT: Support is important to us, and we have many options available. However, Visual Basic has grown faster than we anticipated and has been more popular than we expected. This is one reason Microsoft has recently reorganized around the customer. We are now organized to better serve the value-added reseller and corporate user.

PERFORMANCE: Visual Basic 3.0 was released the same week as OLE 2.0. It was on the bleeding edge since it came out before OLE was fully operational. We have learned a lot about OLE since then, including performance issues. Our total product imperative for the next release of Visual Basic is to be the best product available for use with OLE.

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WINDOWS WORLD OPEN

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Finalists

This week at the Windows World Open in Atlanta, the 24 applications described in the following pages will be displayed as part of an annual contest spotlighting the most innovative custom Windows systems. The 24 finalists were selected by a panel of expert judges from among 143 entries.

The event is sponsored by *Computerworld*, Microsoft Corp. and Windows World. It is cosponsored by AT&T Global Information Solutions, *Fortune* magazine, Borland International, Inc., Cognos Corp. and Wall Data, Inc.

[redacted] YORK'S WORKSTATION OFFERS COUNTRY PROFILES CONTAINING FINANCIAL DATA

[redacted]

ORGANIZATION: American Student Assistance
APPLICATION: A/S/A/P 1.0

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The American Student Assistance Guarantor teamed up with four other major players in the student financing industry to consolidate their systems to offer a single point of access to students and financial aid offices at their desktop computers. This unified system would simplify origination, processing and servicing of federal and private loans.

ORGANIZATION: Duke University Medical Center
APPLICATION: Office of Science and Technology Management Software

Duke University's Office of Science and Technology (OST) is responsible for developing intellectual property and managing industry interactions related to Duke technology. OST Management Software allows Duke to track progress, costs, income, royalties, patents, licenses and [redacted] documents. It also assists with the marketing of medical discoveries made by Duke's inventors.

ORGANIZATION: Fund for the City of New York & Office of Pupil Transportation of the New York City Board of Education
APPLICATION: Computer Assisted Transportation System

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The system has improved the quality of transportation services offered to school children and their families by providing staff with immediate access to information on location of students, schools, bus stops and routes.

Windows World Open, *page 141*

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CAIRO, 1996
Object-Oriented Computing

TALIGENT, 1996
Object-Oriented Computing

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And, still farther in their hazy future, you might be able to distribute objects across networks, running them on powerful servers throughout your enterprise. The way NEXTSTEP works today.

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NEXTSTEP, TODAY

Object-Oriented Computing, Release 3.2

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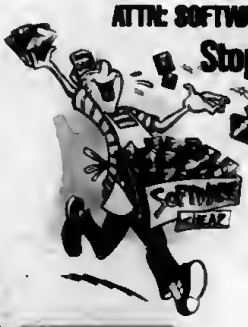

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WINDOWS WORLD OPEN

Finalists

CONTINUED FROM PAGE 136

FINANCE

COMPANY: The Bank of New York
APPLICATION: The Workstation

The Workstation, a client interface tool, provides the following capabilities: securities trade instruction entry, customized reports, ad hoc query capabilities, performance measurement interface, graphical overview and country profiles. It lets users download data, execute processes and distribute data in multiple formats, such as Excel, dBase and 1-2-3, throughout a network.

COMPANY: Price Waterhouse
APPLICATION: TeamMate

TeamMate provides auditors with the functionality to prepare, annotate, cross-reference, summarize, review and store audit working papers electronically.

Audit team members send and receive comments, notes and responses on the work in progress. TeamMate provides an audit workgroup with an electronic tool for organizing, reviewing, accessing and managing the mass of documentation required to support an audit opinion.

COMPANY: Thomson Financial Services
APPLICATION: Anvil Trading System

Anvil is an advanced on-line electronic system for trading variable rate municipal bonds. During the next two years, Anvil is expected to process more than $10 billion in trades per day. Until Anvil was released, business in the $100 billion tax-exempt short-term bond market was conducted via clipboard, telephone, fax and paper forms. Dealers traded by faxing lists and frantically accepting many simultaneous phone calls. Using Anvil, dealers can now sell to all investor trading desks simultaneously around the country within five seconds.

HEALTHCARE SERVICES

COMPANY: Information Management Services (IMS)
APPLICATION: IMS Automated Client File

The Automated Client File is a distributed client management system that IMS uses internally to capture project data. It provides access to corporate data from anywhere in the world.

COMPANY: Molly Maid
APPLICATION: Molly Maid Customer Care System & Maintenance Manager

The Molly Maid Customer Care System is a complete franchisee management system developed using Microsoft's Access. It is currently in use by a major portion of Molly Maid franchises in the U.S.

The system handles the administrative work for all the major operations, including royalty reports.

ORGANIZATION: Shriners Hospitals for Crippled Children
APPLICATION: Shriners Hospitals Patient Administration System

The Patient Administration System facilitates the capture and maintenance of information related to patient demographics; parent/guardian/significant other data; family financial and insurance data; referring physician recommendations; and other relevant patient data.

The system identifies which data elements are missing or deficient and assists the user in resolving the deficiency through integration with Microsoft's Word 6.0 via Object Linking and Embedding. Once a patient is approved for treatment, he or she is scheduled for the initial visit to one of the many Shriners clinics or for inpatient admission.

THIS SCREEN SHOWS POWLET, A STORE CONTROL SYSTEM FOR DOMINO'S PIZZA OF VENEZUELA

BANKING/BROKERAGE

COMPANY: Abasis SA de C.V.
APPLICATION: Abasis Mortgage Loan Solution

Abasis Abaco Grupo Financiero is a large financial corporation that offers banking, brokerage, insurance, real estate and leasing services. The Abasis Mortgage Loan Solution is a client/server system that controls all stages of a mortgage loan. The system has modules to automate promotion, credit application, credit operation and loan recovery. The system is used in 18 major cities throughout Mexico. It is integrated with a network that connects databases all over the country.

COMPANY: PHH Technology Services
APPLICATION: PowerLine

PHH Technology Services is a subsidiary of PHH Corp., a worldwide leader in the real estate and relocation management services industry.

The PowerLine relationship management system is used to discover relationships between PHH and other companies in support of a corporate cross-marketing program. The application cross-references all PHH relationships (client, supplier, investor and competitor) with the corporate family trees of more than 3,000 companies, producing a web of more than 100,000 relationships.

COMPANY: Tokio Marine Management, Inc.
APPLICATION: TMM Customer Loss Analysis System

Tokio Marine Management, U.S. manager for The Tokio Marine and Fire Insurance Co. is an international provider of property and casualty insurance.

The TMM Customer Loss Analysis System is a custom application designed to allow customers to analyze and manage their loss information. The current version of the application can analyze casualty workers' compensation coverage. Later versions will have the appropriate modules added to analyze other types of loss information.

MANUFACTURING

COMPANY: Eastman Kodak Co.
APPLICATION: On-Line Neural Network Machine Vision for Surface Mount Solder Paste Inspection

The application provides a system that automatically inspects and analyzes the fine pitch of circuit board surfaces during the mount/solder-paste process based on an inexpensive machine vision system using a Windows interface. Digital camera data is used in conjunction with a neural network algorithm to grade the solder-paste application process. Solder paste is placed on a circuit board to affix surface mount components. A subsequent manufacturing step places the component on top of the surface mount solder paste, which then passes through a reflow oven, bonding the part to the board.

COMPANY: Concepts by Midmark
APPLICATION: Visions by Midmark

Visions by Midmark is an intelligent parametric computer-aided design system designed to provide fast and easy layout of medical facilities, hospitals and clinics. Users include architects and designers, Concepts by Midmark dealers, customers and internal project coordinators and design staff. With the click of a mouse button, Visions produces full-color plan views, elevation views and three-dimensional views to scale.

COMPANY: Westt, Inc.
APPLICATION: How To

How To is a client/server, multimedia, graphical manufacturing documentation system for PCs and PC LANs. Medium-skilled machinists and assembly workers use it to access written procedures, part and subassembly images and workmanship standards. Users can view tables of parts and tools required for the step-by-step manufacture of various electromechanical assemblies. How To includes a three-dimensional catalog that allows users to select from the complete product line.

MANUFACTURING

COMPANY: J. L. Sistemas, C.A./Domino's Pizza of Venezuela
APPLICATION: Powlet: Fast Food Store Control System

Powlet is an information system designed to control a Domino's Pizza store. It consists basically of modules that control customer data (including preferences), order-taking, order-routing, inventory, store and personnel vehicles, office tasks and paperwork. The system also controls cash flow, bank deposits, store payroll, coupons and special offers. It includes a general point-of-sale system for stores that provide delivery.

Windows World Open, *page 142*

THE INTOUCH APPLICATION IS USED TO CONTROL PROCESSES FOR THE MATTABASSETT WASTE WATER FACILITY

Finalists

CONTINUED FROM PAGE 141

COMPANY: NBC
APPLICATION: Customized Technology Asset Manager (CTAM)

CTAM is a complete facilities management system. It currently includes a Call Detail Recording module (NBC generates about 1 million calls a month); a help desk module for trouble tickets; a cable management system; an inventory control system for the creation of work order tickets; and an operators module for directory assistance. All these modules can interface with a graphics module that contains CAD files of the facilities for easy queries to the databases.

ORGANIZATION: University of California at Los Angeles School of Medicine
APPLICATION: Immex: Problem Solving in the Sciences

It's easy to determine if someone can solve a complex problem. It's more difficult to determine how someone solved a problem and where and why the process succeeded or failed. Immex gives such insight to educators in medical and secondary schools and other settings.

With Immex:Author, teachers create problems, and students use knowledge, search, analogy and other cognitive processes to solve them. Immex:Author opens the world of problem-solving to large numbers of educators and students. Immex:Analysis gives these teachers insight into students' reasoning while solving these problems.

Immex:Transfer globally expands the impact of the project by sharing teacher-developed problems and student data throughout the world via the Internet. Immex:Neural, artificial neural networks, have been trained to recognize salient features of successful problem solutions. These networks can, in real time and in a quantitative manner, provide an "expert's" view of students' problem-solving performances.

COMPANY: AT&T Corp.'s Global Business Communications Systems
APPLICATION: Expert Solutions Platform

The Expert Solutions Platform is an integrated customer service center application that couples custom call-logging and problem-tracking with package software for expert systems, on-line documentation and 3270 terminal emulation.

The system is built to seamlessly integrate intelligent call-routing and other telephone functions using AT&T's Conversant technology. This is a client/server system that is a front end to a legacy mainframe trouble-ticket application.

This system is running at the AT&T Global Business Communication System's National Assistance Service Center in Denver. It has more than 250 concurrent users.

ABASIS IS A MORTGAGE LOAN SYSTEM IN MEXICO

ORGANIZATION: The Mattabassett District
APPLICATION: Intouch for the Mattabassett District

Intouch is used to monitor and control the processes and equipment for the Mattabassett District's large waste water treatment facility, which includes an incinerator. Programmable log and local process controllers feed more than 1,000 points of information to Intouch.

hen a few engineers at Microsoft set out to write Windows NT, they sat down with many cups of coffee, and computers built around the MIPS R4400™ RISC microprocessor.

(No wonder: the NEC V_R4400™ MIPS processor is at the heart of some of the most powerful computers in the world.)

During the next few years, they worked long and hard, missing quite a few dinners with their families and untold televised sporting events.

Today, Windows NT makes it possible for companies to run their enterprise software on a whole new class of dependable, affordable machines. Like the NEC Express RISCserver,™ direct descendant of the machines used to write NT itself. And it gives software developers, designers and engineers access to remarkable new tools like the NEC Image™ RISCstation.™

In short, a few engineers sat down. And the entire computing world leaped.

A river of coffee. A raft

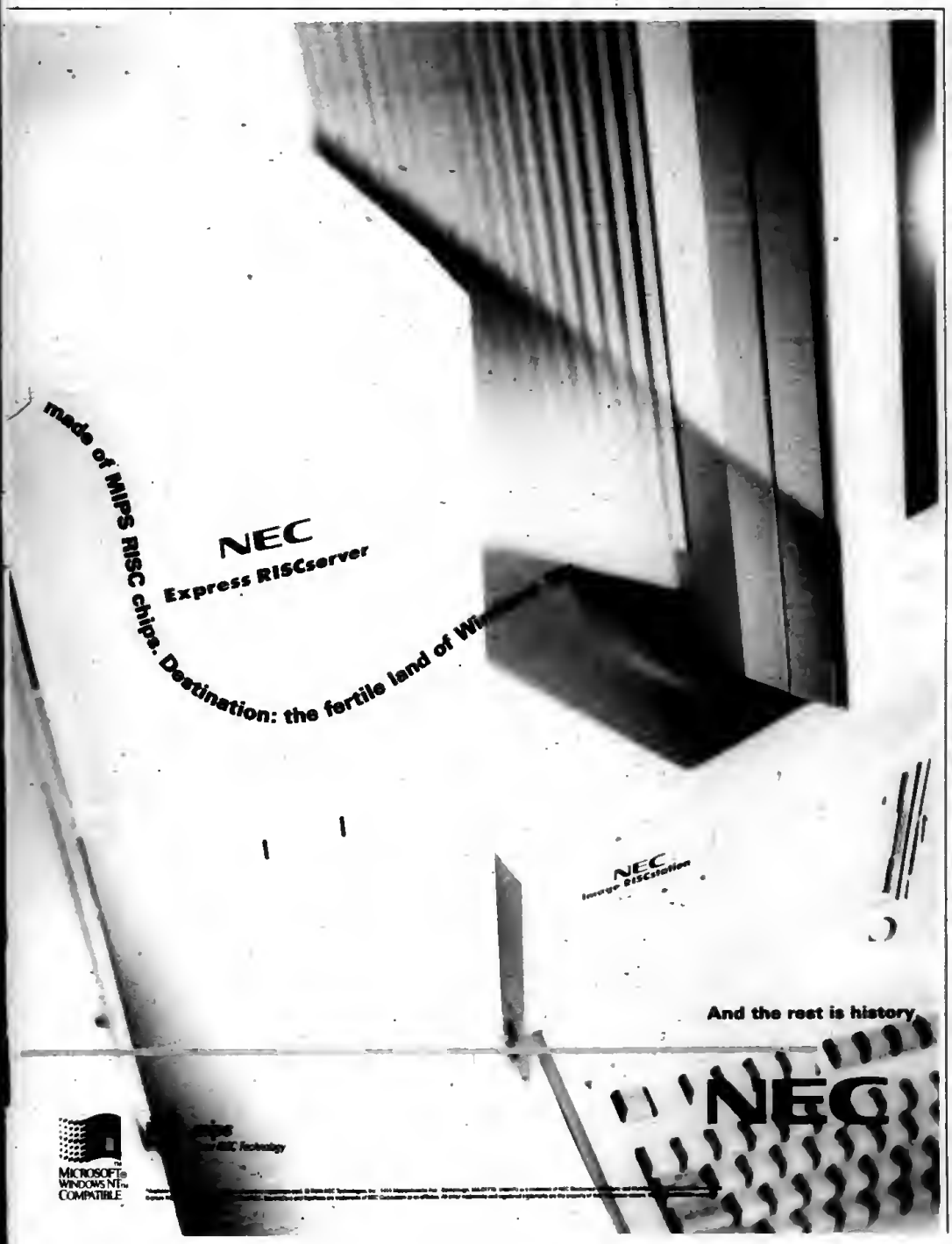
ORGANIZATION: The South Coast Air Quality Management District
APPLICATION: Emission Fee Billing

California health and safety codes require thousands of businesses to annually report toxic and smog-producing substances released into the ambient air. For the South Coast Air Quality Management District, a regional government agency in Los Angeles, this translates into a choking 150,000-page paper deluge from more than 10,000 companies every March.

To manage the paper chase, in 1993 the agency implemented the Emission Fee Billing System. The system, which runs on PCs in the planning division, provides a user interface that integrates modules for forms scanning, optical handwriting recognition, anomaly identification and resolution, auditing and billing.

The application handles anomalies by providing agency staff with screens to easily navigate through the emissions information, which represents 620,500 tons of emissions per year and $30 million in fees.

The Emission Fee Billing System allows the annual forms analysis to be done with 15% of the former staff, freeing up valuable resources to perform other important air quality tasks.



COMPANY: MamSofCo
APPLICATION: MamSofCo's Bookkeeper

MamSofCo's Bookkeeper was designed to allow employees to keep track of their time; keep books; and monitor stock. When employees log in and out, they are preparing their own pay record for that week. The system automatically calculates deductions and enters them on the pay record for each individual employee.

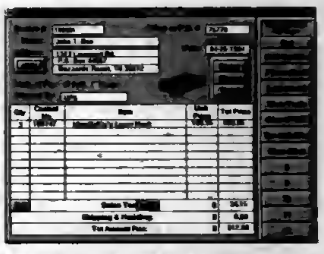
COMPANY: Marvin Windows & Doors
APPLICATION: Marvin Design System

The Marvin Design System allows users to design and specify custom or standard units, add divided lights, combine them into multiple assemblies, view the various geometric representations (floor plan, elevation, details and three-dimensional view) and then print them out.

COMPANY: R. R. Donnelley & Sons Co.
APPLICATION: FundWorx

FundWorx from R. R. Donnelley is an application for the mutual fund industry designed to automate routine, time-consuming tasks in the preparation of shareholder reports. It saves dozens of hours of manual computations and eliminates the time-consuming multicycle process of manual update, typesetting and proofreading. A process that typically takes two months can be compressed into days.

FundWorx stores raw financial information in a database available to the entire workgroup and automates research through electronic information services.



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It extracts information from the database based on user-defined rules, sorts it, performs complex computations and flows it into a word processing document typeset form that users can tailor themselves.

The system, which is a PC-based workgroup application that runs in a networked, client/server environment, provides document management for all components of the complete report. The user can print the report in typeset form on-site, E-mail or fax it for review and transmit it directly to a printing company.

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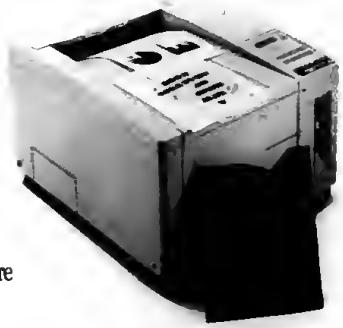

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ROUNDTABLE

More than a decade ago, Dan Bricklin, Bob Frankston and Julian Lange created their Visicalc spreadsheet, the application that set the PC industry on fire. But the industry isn't a sleepy, one-app town anymore. This trio gives us an earful on today's hot technologies, recent consolidations and Microsoft's antitrust woes.

The Killer APP Crew

By Steve Moore

PHOTOGRAPHS BY STELLA KONESER

▲ *Visicalc creators (clockwise, from top) Bob Frankston, Julian Lange and Dan Bricklin set off a spreadsheet craze. Their hot picks today include GUIs and Internet E-mail.*

IN THE LATE 1970s, three software industry pioneers — Dan Bricklin, Bob Frankston and Julian Lange — started a little company called Software Arts that had a little product called the Visicalc spreadsheet that did nothing less than spark a PC revolution among business users.

Bricklin, Frankston and Lange have since traveled different career paths, but all remain actively involved in the computer industry. Bricklin runs application company Software Garden after having headed up the now-defunct pen software firm Slate Corp. Frankston is at the advanced technology division of Microsoft Corp. Lange is an adjunct professor at Babson College in Wellesley, Mass., and directs Chatham Associates, a management consulting company focusing on high tech.

All three met recently with *Computerworld* Senior Editor Steve Moore to share their perspectives on the current state of personal computing. *Computerworld*'s roundtable took place after the trio concluded a workshop titled "Life After Visicalc" at Babson's Center for Information Management Studies.

CW: Visicalc is often said to have been the first real killer application for personal computers. Is there ever going to be another killer app?

BRICKLIN: What is a killer app? The definition seems to be that you have a platform or product that isn't in its own right something that people would want, but a

Roundtable, *page 146*

particular piece of software now justifies buying it and causes the thing to go on its own.

For example, on the Macintosh, initially the killer apps were MacPaint and MacWrite, the ones that were bundled, because people used them for overheads and things like that.

FRANKSTON: The GUI was the killer app.

BRICKLIN: No. Initially people could justify buying a computer because they could use it to produce overheads and marketing materials. Then the killer app became desktop publishing programs such as Aldus Pagemaker. It justified the computer to a whole new set of people, the graphic arts people. Once it became an established platform then the important thing was running a spreadsheet and stuff like that.

Visicalc was special because it was the killer app not for home users or students but for investors and financial analysts, and they said, "Personal computers are valuable! Everybody's gonna want this thing, let's fund it!" So it was the killer app for the right people.

FRANKSTON: With Visicalc, we were lucky because so few people had even looked at the PC, let alone taken it as a serious platform. The problem now is almost the opposite. Because there are so many new applications, so many opportunities, the challenge is in being distinguished. People keep trying to get ahead, but it's hard to predict up front.

CW: Is Mosaic the killer app for the Internet?

BRICKLIN: E-mail is the killer app there because it's cheaper than fax.

FRANKSTON: E-mail is a killer app for a lot of reasons. [With] Mosaic, the killer app there is the standards for the World Wide Web. Mosaic is just the first quick cut at a viewer; it is not the best viewer there will be. But it makes the Internet understandable and approachable.

BRICKLIN: But how many people need or want to do the perusal for World Wide Web? E-mail is different; communicating with your kids who are away at college is a different thing.

FRANKSTON: You do not need to be an Internet user to use E-mail. What the Internet contributed to E-mail was the domain naming system so you no longer had to know arcane addresses and everything was connected.

CW: Powerful applications have come out of the client/server world. But has the client/server concept become distorted?

FRANKSTON: The term client/server changed meanings. Back in the old Multics days, it [meant] you had a back-end engine part and you had a user interface front-end part that could be implemented independently. I think it's devolved into a job-protection program for the MIS department.

Client/server means you split your application at appropriate bandwidth points so you can run them on appropriate systems. Ideally it should be peer, so the client will go to one machine and the server might go on a separate machine. The problem is that the terms tend to get used for political purposes, so that the server becomes this big, dedicated, different type of machine that is an engine managed by MIS, and the client is just like a 3270 to CICS.

LANGE: One of the things that's happened in client/server is that to a certain extent MIS is reasserting itself.

Visicalc originally was a guerrilla movement on the part of people within corporations who didn't want to be dependent on centralized MIS. I remember doing a case study around 1980 for a group of executives in the sports equipment

[Client/server] has devolved into a job-protection program for the MIS department.

BOB FRANKSTON

industry, and out of a group of 50, a dozen of them came up and wanted to know exactly what sort of personal computer they should buy — Apple or Radio Shack — and exactly what the Visicalc program was and where they could buy it.

These CEOs were saying, "The problem is that when I have an issue I want to solve and I call in my MIS people and try to explain it to them, something is lost in the translation. They go back and two weeks later give me an answer that's part right. I want some more, but by the time they come back the second time, I've had to make the decision without them."

With Visicalc and Apple or Radio Shack, they could go around that process, and they could also charge it to their credit card so they wouldn't have to deal with departmental budgets.

BRICKLIN: It's cheaper to do the user interfaces we want for training and other things locally. If you had that all on a centralized machine, the bandwidth isn't there to communicate and the power isn't there. It's just much cheaper to move that computing to the people.

However, there are some things that are easier to program in a single centralized machine. MIS is asserting itself, and that's important because backup and other things individuals may not do need to be centralized. It's just like how custodial services are centralized; otherwise, we'd have garbage everywhere

CW: What are your thoughts about the ongoing consolidation of software companies?

LANGE: It's a lot harder for the independent company that has a commodity kind of product to compete.

FRANKSTON: You can either start your business under the elephant's foot or you can find a place where the elephant isn't going to stomp on you.

BRICKLIN: The elephant was IBM when we started, and it's Microsoft now, but there are just as many software companies. When you look at the membership of the Software Publishers Association, it's bigger than it ever was

CW: Should Microsoft be broken up on antitrust grounds because of its dominance in the PC software market?

The great thing about the software industry . . . is that someone can still get a great idea in an attic someplace and get leverage.

JULIAN LANGE

FRANKSTON: The world is constantly changing, and the government has a tendency to break things up after it becomes a nonissue. Microsoft's challenge is to break into the next world.

BRICKLIN: I think it's important that the investigations go on. Remember, IBM was not really broken apart, but the Justice Department had a major effect on IBM. Microsoft is headed by a very determined individual who is able to focus. When he's into a particular area, he keeps trying, and he funds it because he's able to do that.

If you complain that Microsoft is no good because it doesn't do such and such, you know [those features will top] its list for the next release.

But when you have an individual like that and the culture that they have there, you get some overzealousness among some of the people they hire, and they're willing to go right up to the line. Having this investigation is going to cause them to put some controls in to make sure that the overzealousness doesn't get out of hand.

When they're doing a deal with a particular OEM, are they pushing the line and saying, "You better do this?" Is that being done at the top or at the bottom? It could be either one. Just like the Justice Department investigation caused IBM to be really careful about preannouncing, Microsoft may have to watch some of the same things.

When you have an individual like [Bill Gates] and the culture that they have there, you get some overzealousness. . . . Having this investigation is going to cause [Microsoft] to put some controls in.

DAN BRICKLIN

LANGE: Look at where IBM was in 1980. When they approached us about Visicalc, they were it. The government's consent decree isn't what hobbled IBM. What hobbled IBM was its installed base. It's the old joke: Why was God able to create the world in only six days? Because there was no installed base.

The great thing about the software industry, as Dan was saying, is that there are more companies now than ever before, and someone can still get a great idea in an attic someplace and get leverage.

CW: What role will IBM play in the PC software market over the next few years?

FRANKSTON: If you look at its AS/400 business, IBM is a great vertical market sales and applications company. The question is can it translate that to the PC platform? There's no reason IBM can't be a player.

BRICKLIN: They won't have the industry captive the same way they used to. Knowledge of the business application area is more valuable than anything else right now. Does selling that make them a $10 billion company? That's the question.

CW: What impact will wireless mobile computers have on the PC software market?

FRANKSTON: I think the ability to assume connectivity is going to have a major impact. The whole point of wireless is that it gets around the death hold the regional Bell operating companies have on plain old telephone service.

The pen market and personal digital assistant market are problematic because you need your data where you are, but the devices you can carry with you aren't sufficient. The ability to be less worried about where things are is going to greatly increase the value of the base PC as well as enable peripheral devices.

BRICKLIN: The problem that's going to occur because of the communications thing is that we're getting more and more on the desktop computer as it gets connected to very high bandwidth. If you start expecting the same thing on your portable while you're traveling, then we have the problem of dealing with both of them. It hobbles our apps because we expect them to work in both locations. It can be a real problem because if people think we have high wireless bandwidth, they're deluding themselves.

What is considered low bandwidth now? If you have a 150K bit/sec. transfer rate CD-ROM, you're obsolete and you can't run a new game. You need at least 300K bit/sec., which is a few ISDN lines, right? We're talking about doing that wireless? (Laughs.) If you start expecting real-time video and stereo from a database instantly while you're interacting with someone else, there is a problem with it.

CW: Will remote procedure call technology solve these problems?

FRANKSTON: I think remote procedure call is one of those bad ideas that should be stomped out and squished. It's based on the naive notion that there's no difference between having a conversation between two people that's very clear and whispering over a long series of people. ■

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UTERWORLD
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A new game

Traditional experience won't allow database administrators to move seamlessly into client/server. The transition demands Unix, networking and programming know-how.

By Sally Cusack

"If a database administrator is expected to rely on what they have learned over the last 10 years, it isn't going to work," says Kurt Kessel, database administrator at the American Automobile Association (AAA) in Heathrow, Fla.

Client/server technology is nothing new for Kessel and his staff. AAA relies on Informix Corp.'s relational database management system for its service bureau system. It runs the software off a Sun Microsystems, Inc. departmental server with SPARCstation 2s and Windows-based IBM PC compatibles linked into the system.

In Kessel's opinion, the biggest change in a database administrator's job during a client/server rollout, is the need for more hard-core analytical skills. For example, rote procedures don't exist in open client/server environments: there's always the potential for system development and enhancement, Kessel says. Therefore, database administrators spend more and more time researching, checking and planning procedures.

Once considered a safe bastion in an era of ever-changing technology, the database administrator's role is changing, with an emphasis on Unix literacy, TCP/IP networking and parallel database technology. And while distributed databases, replication and mirroring technology offer tremendous benefits, they make the database administrator's job considerably more difficult.

A good starting point, says Dave Hudson, director of The Standish Group International, Inc., a consulting firm in Dennis, Mass., is to concentrate initially on learning Unix command line and shell scripting offered in any basic introduction to Unix.

And although the database activities themselves are basically the same, the real challenge is getting used to a heterogeneous and chaotic environment. In a centralized computing structure, everything is common and centrally controlled. Not so in client/server, where users log on from various LANs. Managing different software versions, computing platforms and libraries, for example, can become a nightmare.

Havoc control

Rob LaLonde, database administrator at Mead Paper, a division of Mead Corp. in Escanaba, Mich., hopes to circumvent any major problems by doing his homework now.

Mead currently relies on Digital Equipment Corp.'s Rdb and The ASK Group, Inc.'s Ingres to handle its manufacturing operations. Both systems operate on a four-node Digital VAXcluster environment. Approximately 200 users routinely access the applications.

LaLonde and his staff are evaluating smaller high-speed servers for Ingres and different Unix platforms for the Rdb environment. He agrees that moving from a centralized structure to a heterogeneous client/server one can create havoc for a database administrator.

"Sure, client/server affords better response times and flexibility in growth, but there is a lot more maintenance involved. It's much harder to maintain many small boxes. Personally, I found myself severely lacking in networking skills," LaLonde says.

Defining a network as both hardware and software, LaLonde studied such things as the advantages and disadvantages of TCP/IP vs. DECnet and various aspects of desktop computing. Learning PCs and PC networking, and subsequently understanding the physical and logical connection of various devices, are basic networking skills that all database administrators should have.

Real life

Furthermore, today's database administrators must bring real-life scenarios into database development, Kessel says. "There is a lot of hands-on activity, and both programmers and administrators have to be aware of the path between the logical and physical model."

However, while most database users in a Unix environment are doing enterprise-level data management, The Standish Group says there must be better administrative tools before many large shops will commit their data warehouses to an open environment. This gives administrators and programmers time to bone up not only on Unix but on the networking skills that accompany a move to a client/server environment. ■

Cusack is a market analyst at The Standish Group International, Inc., a Dennis, Mass., consulting firm that focuses on reliable enterprise computing.

Roll up your sleeves

While attending classes to learn operating system and network skills is important, nothing beats the actual hands-on experience. In addition to acquiring networking, PC and people skills, Kurt Kessel, database administrator at the American Automobile Association in Heathrow, Fla., offers database administrators the following advice:

- Learn more about the company's business applications.
- Get more involved in the logical data models.
- Become familiar with C and C++.
- Learn how to really read code.

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Life on the workgroup frontier

Lessons From Notes administrators

By Bronwyn Fryer

Ask most Lotus Development Corp. Notes administrators about their job, and you're likely to get the same answer: It's sometimes lonesome, often a hassle, but it's never dull. In fact, it can be downright exciting. "It's a lot like riding a motorcycle," says Thomas Wheeler, systems specialist for LAN and wide-area network services at Nynex Corp. in Pearl River, N.Y. "It's addictive."

It's also extremely challenging. Because Notes administrators frequently wear two hats, including that of application developer, they must grapple with two sets of issues. In their administrative role, Notes specialists deal with everyday systems administration problems such as tracking hard-to-find network conflicts, keeping the server up and backing up the system.

They must also deal with planning issues, some of which can be enormous. Aninda Dutta, a staff member at the corporate computer resources department of Merck and Co. in Whitehouse Station, N.J., is responsible for overseeing Notes application administration and development for the 23,000-employee international firm.

In large companies such as his, Dutta says, implementation must be done very carefully. "On one hand, a first implementation of Notes can get tricky when you're working with more than 10 users under OS/2," he says. And while it's difficult to tell exactly how many sites will be using Notes, "it's best to try to envision as many sites that you'll possibly need when you're in the planning stages," Dutta says.

Ramping up

Notes administrators agree that Notes is made easier by first learning the product as a fluent user, then taking the two certified Notes application developer courses. Finally, learn to develop applications by making generous use of Notes' application templates.

Development duties

In their application development role, Notes specialists face other challenges. For those who began in traditional text-based programming, making the switch is a huge conceptual leap, largely because development in Notes resembles object-oriented programming. And while most databases consist of separately programmed front and back ends, Notes developers must learn to control both at once. "You don't want to be developing Notes applications unless you know Notes' proprietary database structure," Dutta warns.

Because that structure is difficult to get used to, the learning curve is steep. "If you're a dyed-in-the-wool programmer used to dBase or Clipper, you will find Notes very difficult at first," says Judy Ruffing, information systems director at the Information Technology Association of America, a nonprofit professional organization in Arlington, Va. Ruffing, who teaches Notes development, adds that traditional programmers tackling Notes for the first time would do well to forget their background. "In fact, the best application designers come from the ranks of superpower users, who are not biased by traditional software development methodology," she says.

Once the programmers learn to work in Notes, the job of administration and application development can be interesting, yet lonely. "When you do traditional programming, there are usually several other people who can help you or who you can use as a resource," Ruffing says. "When people start designing applications in Notes, they're usually working all by themselves."

For this reason, most administrators insist user groups are critical sources of support. "You absolutely have to join user groups. There's no way you can do this by yourself," Wheeler says.

Despite the difficulties, Notes administrators say, working with Notes is a much more satisfying experience than traditional programming. Because basic prototypes can be rapidly developed, getting a working system up and running is much easier than in most other environments. "It's great when people who need the application tell you what they want, and they can see a prototype the same day," Ruffing says.

Wheeler, who came from a traditional programming background, says working with users to develop new Notes applications has made his work much more fun. "Notes has taught me how to communicate," Wheeler says. "I've turned into a real people-person. Before, people knew of me, but they didn't know me. Now I get fan mail." ■

Fryer is a free-lance writer in Menlo Park, Calif.

Don't go it alone

Notes administrators and developers can share information and expertise with one another and with Lotus by joining the Worldwide Association of Lotus Notes Users and Technologists (WALNUT). A $125 annual membership fee includes a subscription to the WALNUT newsletter and membership in one regional interest group. Members also provide Lotus with their feedback on Notes. Users can access WALNUT Notes discussion databases at a start-up fee of $1,500.

These databases are also available through CompuServe. For more information, contact WALNUT, c/o Dunleti & O'Keefe Associates, 490 Boston Post Road, Sudbury, Mass. 01776; (800) 524-1556, ext. 1222 or (508) 443-3330, ext. 1222.

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CONSULTANT: 40 hrs./wk., 8am-5pm, $62,100/yr. Analyze, design and develop software application systems for IBM 3090 mainframe utilizing COBOL, PL/I, DB2 and CICS. Carry out enterprise data modeling, architecture planning and performance tuning of the systems, prepare test plans and data, and implement the system. Require Bachelor's degree in Computer Science, Electrical Engineering, Mathematics, & yrs. exper. in job offered or 8 yrs. exper. as Systems Programmer/Analyst/Engineer. Experience in design and development of systems on IBM 3090 mainframes utilizing COBOL, PL/I, DB2 and CICS. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No: 36494.

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FAX 501/741-0342. EOE

Programmer/Analyst: Will design and configure office automation solutions for Local Area Networks including the design and setup of Client Server, Print Server, and Fax Server using C++ language including hardware/software integration and hardware configuration modifications. Will install networks in accordance with customer's specifications and will perform on-site training of users. Will plan and develop customized database and software including Computer-Aided design setups in C language as required by customer to be installed on appropriate network systems. Requires M.S. degree in Computer Science, Engineering, or Architectural field. Education to include completion of one course in each of the following: Computer Graphics; Object Oriented Programming using C++; Data Structures in C; Computer Application in Design (Simulation); and, Computer Simulation. Hours: 9:00 a.m. - 5:30 p.m. 40 hours per week at $33,000 per year salary. Must have proof of legal authority to work permanently in the U.S. Please send two copies of resume to: Illinois Department of Employment Security, 401 S. State St. - 3 South, Chicago, IL 60605, ATTN: Jack Schaffer, Ref #V-IL 11461-J, No Calls, An Employer Paid Ad.

Computer Software Engineer: coordinate and direct LANSA system development projects; engineer and develop software using LANSA Computer Aided Software Engineering product on IBM AS/400 computers; conduct LANSA project analysis and design activities; develop LANSA training courses and coordinate LANSA training for software engineering and client personnel; perform computer aided software engineering and programming functions. 4 years college, Bachelor's degree in Business Administration with concentration in Data Processing required. 5 years experience in the position or 5 years as a Computer Software Engineer required. Experience in related position must include experience coordinating and directing LANSA system development projects; engineering and developing software using LANSA Computer Aided Software Engineering product on IBM AS/400 computers; and developing LANSA training courses. 40 hrs./wk; 8:30 a.m. - 5:00 p.m., $60,000/year. Must have proof of legal authority to work permanently in the U.S. Send resumes to Illinois Department of Employment Security, 401 South State Street-3 South, Chicago, Illinois 60605 Attention: Jean Woodson, Reference Number V-IL-11751-W. NO CALLS. AN EMPLOYER PAID AD - SEND 2 COPIES OF RESUMES.

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Send resume to: APSC, K. D. Brock, 800 Cabin Hill Dr. Greensburg, PA 15601 (EOE).

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Twentieth Century Companies, one of the top performers in the mutual fund industry with more than $25 billion in assets, is seeking data processing professionals to join our expanding Information Systems department. Twentieth Century Companies provides management and service to Twentieth Century, a growing family of no-load mutual funds located in Kansas City, Missouri.

OS/2 Database Analyst

Responsibilities: Provide design consultation, technical support and problem determination assistance for applications (programming and information center teams; translate logical database design into physical implementation supported by database management system, create and maintain physical database resource definitions.
Qualifications: Experience with workstation and small system platforms, OS/2, DB2/2, DDCS2 required; SQL, networking knowledge and DB2 DBA experience preferred; UNIX experience a plus.

Analyst-Imaging Technology

Responsibilities: Provide programming and user support for existing systems; research, develop and implement new systems utilizing Imaging technology.
Qualifications: Minimum of four years of information systems experience, ideally in both an IBM MVS and PC environment; experience with COBOL, CICS, DB2, Imaging technology (IBM's ImagePlus preferred), GUI applications and either C, C++ or REXX required.

Both positions require a degree in an MIS related field or an equivalent combination of education and work experience; excellent verbal, written and interpersonal skills; and ability to work well with others and independently.

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Programmer/Analyst: Program, audit, test, design, and develop business application programs and software for a Foxpro database using C and C++ languages in a Novell network environment. Will use block-structured programming languages, including C, C++, and COBOL, to modify relational databases and insure that software is integrated in a Novell network environment. Including use of computer theory and Assembly language to insure integration of hardware and software. Requires M.S. degree in Computer Science. Also requires six months experience in the job to be performed or six months experience as a Programmer. If experience in related field, entire experience must include use of either Foxpro or dBASE III Plus database system including modular programming in a local area network environment. Education to include completion of a Master's thesis or one year as a Research Assistant, Teaching Assistant, or Computer Lab Assistant in which the individual developed software packages and programming in a Novell network environment. Education to include completion of one course in Compiler Construction and one course in Theory Programming Languages. Hours: 9:00 a.m. - 5:00 p.m. 40 hours per week at $34,286.00 per year salary. Must have proof of legal authority to work permanently in the U.S. Please send two copies of resume to: Illinois Department of Employment Security, 401 S. State St. - 3 South, Chicago, IL 60605, ATTN: Gordon Dobber, Ref #V-IL 11697-G, No Calls. An Employer Paid Ad.

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Oracle Database Administrator - 1 year experience with Oracle and UNIX. Experience with physical design, account administration, performance tuning and capacity planning, back-up and recovery, and security required.

UNIX Systems Administrator - 2-3 years experience with UNIX. Experience with physical design, account administration, performance tuning and capacity planning, back-up and recovery, and security required.

Programmer and Programmer/Analyst - 2-5 years experience with C and UNIX. Familiarity with Oracle is a plus!

PC Support Supervisor - Manage group that provides network and PC support to corporate users. Qualified individuals will have 4-5 years related experience including 2 years of supervisory experience. Experience with DOS, Windows, TCP/IP, Ethernet, network management and help desk required. Banyan Vines knowledge is a plus!

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SENIOR SOFTWARE ENGINEER (Ref. #34094) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' electronic data processing systems; analyze user requirements, design & develop computer software application programs & maintain existing application programs by providing technical support using IBM 3090, IMS/DC, IMS/DB, DB2, COBOL, XPEDITOR, BTS, JCL & VSAM; Reqs. Bach. in Comp. Sci., Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Systems Engineer or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in job offered or related occup. In lieu of req'd ed. & exp. Related exp. must include providing systems application software support using IBM 3090, IMS/DB/DC, COBOL, DB2, JCL & VSAM; $47,000/yr. 40 hr/wk., 8:30a-5p.

SOFTWARE ENGINEER (Ref. #32994) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' electronic data processing systems; design & develop test suites for Unbreak operating system; develop & enhance testing tools for Test Environment Toolkit framework. Suites to be developed: TCP/IP, Ethernet, Token Ring LANS, distributed computing, C & shell languages; Reqs. Bach. in Comp. Sci., Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Consultant or Systems Engineer. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in job offered or in related occup. In lieu of req'd ed. & exp. Related exp. must include, in whole or in part, design & development of test suites using Test Environment Toolkit, software development for enhancement of LANS & software development using C language, Intel 80386 based UNIX machine; $46,000/yr. 40 hr/wk., 8:30a-5p.

SENIOR CONSULTANT (Ref. #32494) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' electronic data processing systems; system study, design & analysis of integration of PRO-BAM Transit Chess (manufacturing system) application software to Oracle based relational Chess. Guide & assist in developing computer software, develop programs using Oracle & coordinate & supervise work of programmers using IBM RS 6000, AIX (UNIX) & ORACLE; Reqs. Bach. in Comp. Sci., Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Software Engineer, Software Project Manager or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in job offered or in related occup. In lieu of req'd ed. & exp. Related exp. must include, in whole or in part, designing and developing computer software using ORACLE under UNIX environment; $44,000/yr. 40 hr/wk., 8:30a-5p.

PROGRAMMER ANALYSTS (Ref. #34094) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' electronic data processing systems; design & develop client server architecture for interactive store-to-store communications using WINET, RPC/XDR & TCP/IP; remote orbit development, DCE, porting, operating system optimization & system administration, using SVR4 on UNISYS U6386, IBM RS 6000 (AIX, HDS 3250, 6000), MPI, C & Assembly languages; Reqs. Bach. in Comp. Sci., Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Sr. Software Engineer, R&D Software Engineer or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in job offered or in related occup. In lieu of req'd ed. & exp. Related exp. must include, in whole or in part, coding, developing, porting & testing on UNIX platforms including AIX & SUN OS & must have exp. using IBM RS 6000, SVR 3.2 NFS & others & kernel modules; $48,000/yr. 40 hr/wk., 8:30a-5p.

CONSULTANT (Ref. #34194) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' electronic data processing systems; conduct user meetings, systems analysis, design & development, development of programs in COBOL, testing, requirements specifications, analysis, high & low level design & program design using IBM ES 9000, IBM PC-AT, Banyan Vines Network, EXCELERATOR case tool, TURBO ANALYST case tool, IBM DB2, CICS, COBOL II, Easytrieve, Filedit, MS Windows & MS Word; Reqs. Bach. in Comp. Sci., Engineering, Systems Analysis or its equiv. & 3 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in job offered or in related occup. In lieu of req'd ed. & exp. Related exp. must include, in whole or in part, using CICS, DB2, IBM Mainframe(s) & COBOL; $40,000/yr. 40 hr/wk., 8:30a-5p.

PROGRAMMER ANALYST (Ref. #32994) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' electronic data processing systems; analyze, design & develop Process & Network Management System; analyze & design using KnowledgeWare's ADW, logical & physical data modeling, user requirement analysis, porting of applications on MVS & VM operating systems, technical support & development of applications using IBM ES9000 using MVS/ESA, VM/ESA, CP, CMS, Kimberly Computing's CSP/Application Development Enabler, DB2, SQL/DS, DMF, Query Collector Interface, IBM IUO Utilities, REXX, PLI, CLIST, JCL, SMA, VTAM, NCP, Shared Regions & HUCXLOAD on VM; Reqs. Bach. in Comp. Sci., Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Technical Consultant or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in job offered or in related occup. In lieu of req'd ed. & exp. Related exp. must include, in whole or in part, using IBM ES9000, MVS, VM, DB2, SQL/DS, REXX, CLIST, CSP & DMF; $44,000/yr. 40 hr/wk., 8:30a-5p.

CONSULTANT (Ref. #34294) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' electronic data processing systems; provide solutions for real-time industrial manufacturing & transaction processing systems; design & develop device drivers, real-time software & client-server modules using VAX/VMS, Network Protocols, Windowing Systems, VAX Workstations, machine level programming, graphical user interfaces, C language, Intel CPU architecture, Embedded SQL, Object Oriented Design & Programming using C++; Reqs. Bach. in Comp. Sci., Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Software Specialist, Product Engineer or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in job offered or in related occup. In lieu of req'd ed. & exp. 2 yrs. exp. must include interaction, design & development of device drivers, real-time software & software development of client-server model. Related exp. or training must include each of the following: VAX/VMS, Network Protocols (e.g. DEC Pathworks), Windows System, VAX Workstations (e.g. DEC station) & machine level language (e.g. VAX macro), C language, Intel CPU (e.g. 80386), SQL, Object Oriented Programming & programming using C++; $47,000/yr. 40 hr/wk., 8:30a-5p.

Send resume to 7310 Woodward Ave, Rm 416, Detroit, MI 48202 & include Ref #. Employer Paid Ad.

Grand Valley State University invites nominations and applications for the following position:

Systems/Analyst: A bachelor's degree in computer science or related field from a regionally accredited institution is required. Professional programming experience in an IBM/MVS mainframe environment preferred. Experience with ADSO, CICS, and IBM JCL preferred. Experience in computer operations is preferred. The primary functions will be to monitor the daily production batch cycle; manage inventory of operational supplies; analyses and tuning of the production batch schedule; maintain current operations experience, primarily through providing operator coverage for vacations and illnesses; serve as backup to production control; analysis and document new operational procedures; maintain vendor supplied programs and work with administrative users in designing changes; maintain programs in production status; and provide user training. The systems/analyst will receive assignments and technical supervision from the Administrative Programming Manager. Please refer to Position 210288.

Applications must include a letter which specifically addresses how skills, education and experience relate to the position announcement, a resume, and a list of three references. Send correspondence to Administrative Computing, 225 Manitou Hall, Grand Valley State University, Allendale, MI 49401

Applications must be postmarked by June 30, 1994. EEO/AA

Programmer Analyst - in Springdale, AR - Analyze requirements, design and develop VAX/VMS based inventory management systems using DEC TP programming tools: VAX ACMS, VAX COBOL, VAX CDD+. Enhance and debug existing systems and programs and provide user support. 40 hrs/wk; 8AM-5PM; $30/hour. Req. 2 yrs experience. Resumes to Employment Security Dept., P.O Box 1205, Fayetteville, AR 72702 J.O. #744071.

Programmer/analyst(s) - Performance of client customized batch and on-line administrative applications programming and systems design in COBOL II, TELON, JCL and SQL under CICS and DB2. Development of financial reporting systems. Reqd: two years exp. in job offered & willingness to frequently relocate to varying client job sites of six months to one yr. intervals in South and South Central, U.S.A., $38,000.00/Yr., Mon-Fri, 9-5 (40 hrs./wk). Apply at the Texas Employment Commission, Dallas, Texas, or send resume to the Texas Employment Commission, TEC Building, Austin, Texas 78778, J.O. #TX7214718. Ad paid by an equal opportunity employer.

Programmer/analyst(s) - Analysis, design & programming of batch and on-line personnel activity, time recordation & customer claims systems in COBOL II, JCL & SQL languages on IBM mainframes under DB2 & CICS. Reqd: Two yrs. Exp. in job offered & willingness to frequently relocate to varying client job sites of six months to one yr. intervals throughout U.S.A. $36,000.00/Yr., Mon-Fri, 9-5 (40 hrs./wk). Apply at the Texas Employment Commission, Dallas, Texas, or send resume to the Texas Employment Commission, TEC Building, Austin, Texas 78778, J.O. #TX7214717. Ad paid by an equal opportunity employer.

Programmer Analyst - In Springdale, AR - Analyze requirements, design and develop VAX/VMS based inventory management systems using DEC TP programming tools: VAX ACMS, VAX COBOL, VAX CDD+. Utilize CMS code management systems and VAX LSE for source code development and management. Enhance and debug existing systems and programs and provide user support. 40 hrs/wk; 8AM-5PM; $30/hour. Req. 2 yrs experience. Resumes to Employment Security Dept., P.O Box 1205, Fayetteville, AR 72702 J.O. #744072.

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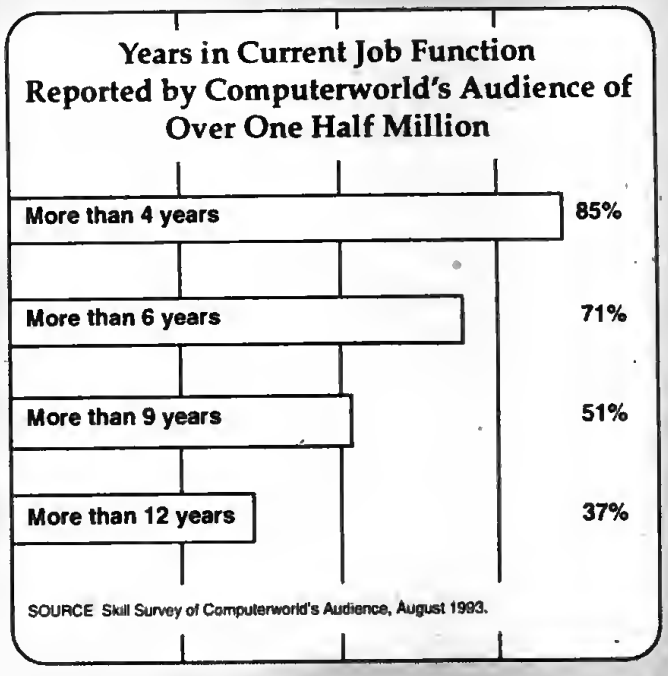

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Oracle Database Administrator - 1 year experience with Oracle and UNIX. Experience with physical design, account administration, performance tuning and capacity planning, back-up and recovery, and security required.

UNIX Systems Administrator - 2-3 years experience with UNIX. Experience with physical design, account administration, performance tuning and capacity planning, back-up and recovery, and security required.

Programmer and Programmer/Analyst - 2-5 years experience with C and UNIX. Familiarity with Oracle is a plus!

PC Support Supervisor - Manage group that provides network and PC support to corporate users. Qualified individuals will have 4-5 years related experience including 2 years of supervisory experience. Experience with DOS, Windows, TCP/IP, Ethernet, network management and help desk required. Banyan Vines knowledge is a plus!

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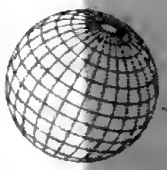

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- Experience working as a technical advisor/liaison with non-technical users.

SF-171 applications must be forwarded to: U.S. Peace Corps, Office of Human Resource Management, 1990 K St., NW, Rm. 4100, Wash., DC 20526. Attn: Lynn Newkirk. Call (202) 606-3400 for copy of vacancy announcement and other info. All SF-171 applications must be received by 5pm EST 6/17/94

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Will provide systems, requirements definition, design and support for new and existing products. This includes experience in one or more of the following:
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Specialized experience includes:
- BS/BA in computer science or MIS or equivalent experience
- 3- 5 years experience in one or more of the following: TAL, TACL, COBOL, and SCOBOL
- Knowledge of TTSI, TSCP/SCP, SQL, ENFORCE, PATHWAY and GUARDIAN
- Knowledge of X.25, SS7 and IS41 desirable

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The qualified candidates we seek will provide solutions to a wide range of technical problems with Unix systems in the development of our latest generation of products.

Positions require an appropriate technical degree, 3 to 5 years experience, demonstrated technical competence in software development using C, C++, UNIX, RDBMS, GUI and MS/X windows. Knowledge of data communications (IS-41 and SS7 standards) client server is desirable.

If you are interested in a growth opportunity and working in a state of the art environment, please mail or fax your resume to:

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Director of
UNIVERSITY COMPUTING SYSTEMS
Florida State University

Florida State University seeks outstanding candidates for the position of Director of University Computing Systems. Director is responsible for planning, development and implementation of University-wide administrative information systems. The Director supervises Associate Directors for Information Systems, Computer Operations and Facilities, User Services, and Information Administration. These units consist of a staff of 70 employees who support the University-wide functions.

Required Qualifications: A master's degree in an appropriate area of specialization and six years of appropriate experience; or a bachelor's degree in an appropriate area of specialization and eight years of appropriate experience. **Preferred Qualifications:** A successful leadership record of progressively responsible experience in managing people; superior interpersonal and communication skills, strong team management ability; knowledge of current trends in information technology, evidence of innovation / creativity in applying technology in a university environment; a demonstrated commitment to collegial decision-making and service excellence; and substantial experience in a large research institution.

Anticipated salary will be commensurate with education and experience. Applicants should send a letter of application, two resumes, and names, addresses and telephone numbers of three references to:

Mr. Randy J. Harris
c/o Personnel Relations Department
216 William Johnston Building, Box 1001
Florida State University
Tallahassee, FL 32306-1001

Nominations are welcome.
Applications must be received by June 30, 1994.

Florida State University is an Equal Opportunity, Affirmative Action Employer

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Senior Software Engineer. Requires: B.S. in Computer Science or Electrical Engineering, or foreign equivalent, and 3 yrs exp as software engineer or systems analyst. The 3 yrs exp must include 1 yr writing file transfer software: FTP on Unisys Mainframes and Kermit/Xmodem Advanced File Transfer on A-Series; 1 yr exp w/ the following terminal emulation software: Unicorn UTS 20/40/60, IBM 3270, Burroughs T27/MT868/TD860, and Async VT100 and Higher; 1 yr exp managing a team of software engineers; 2 yrs exp w/ C, C++, Intel 8086/8088 programming languages; and 2 yrs exp w/ MS-DOS, MS-Windows, OS/2 operating systems, and Unisys Mainframes. Duties: Lead, direct and design, with a team of 5+ software engineers, MS-DOS and MS-Windows platform-based proprietary communications software packages which allow microcomputers to communicate with mainframes. Utilize thorough knowledge of high level programming languages: C, C++, Intel 8086/8088, applicable operating systems (MS-DOS, MS-Windows, OS/2, and Unisys Mainframes), terminal emulation (Unicorn UTS 20/40/60, IBM 3270, Burroughs T27/MT868/TD860, and Async VT100 and higher), and file transfer software protocols: FTP on Unisys mainframes and Kermit/Xmodem Advanced File Transfer on A-Series) to implement customer requests and produce state-of-the-art communications software. Utilize knowledge of interface between hardware and software and operational and performance requirements of overall system to analyze software requirements to determine feasibility of design within time and cost restraints. Use schematic analysis and mathematical models to predict and measure outcomes and consequences of design. Research, design, and develop protocol verification software or host communication link layer and of packet layer involving LAN traffic. Develop and direct software system testing procedures, programming, and documentation. EOE. 40 hrs/wk, 8:00 a.m. to 5:00 p.m. $62,800/yr. Send resume (NO CALLS) to Joyce Hudson, Director, Human Resources, Digital Communications Associates, Inc. 6550 Montgomery Rd, Cincinnati, OH 45236.

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Software Development Consultant: Develop commercial applications for financial management, manufacturing, distribution, warehouse management, freight forwarding, sales, purchasing and inventory controls. Design and develop applications on IBM Sys/38 & AS/400 systems. Implement & convert software working with RPG, SQL/400, CICS, IMS, JCL, & CASE tools, design & develop systems for tracking accounting functions, inventory controls, master scheduling, & shop floor controls through barcode scanners, install new systems & conform hardware & software environments to systems requirements; develop technical specifications & designs. $38,995.40/yr. 40 hrs/wk, M-F. BBCS or equivalent BS in Engineering or CS & 2 yrs. exp. as Software Consultant, Software Engineer or Systems Analyst. Background/experience should include design & development of manufacturing & inventory applications in an AS/400 environment using RPG, CICS, JCL, IMS, SQL/400, & CASE tools, & use of electrical graphics & printers for conversion of UPC barcode information to inventory databases. Submit resumes to the GA Dept. of Labor, Job Order #GA 5722428, 1535 Atkinson Rd., Lawrenceville, GA 30243 or to the nearest GA Job Service Center.

Broadway & Seymour

Broadway & Seymour, Inc. is a $100M technology company dealing in multiple platforms in a high acquisition, growth mode. We provide systems integration, software development services and quality products to the financial services industry. If you are a problem-solver and a team player, we have the following Charlotte-based opportunities (some travel required):

DATABASE ADMINISTRATORS

Must be experienced in storing objects in a relational format and transferring data modules into RDBMS. Relational database (Sybase, Oracle, SQL Server) experience required. Reply to Dept. JDL522.

Additional openings for **Sybase DBA** with experience in:

- Physical/Logical design
- Multiple server, production network
- SunOS, SolarisOS Network
- Stored procedures

Reply to Dept. JDL522

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- C, C++
- Sybase
- Banking, financials

Reply to Dept. JDL522

OBJECT ORIENTED ARCHITECT/DEVELOPERS

Opportunities available for professionals with the following skills:

- Strong OOA and OOD experience.
- C++, Smalltalk (Digitalk and/or ParcPlace)
- Practical experience with OO methods, tools, libraries, and standards
- Visual C++, Microsoft SDK, Microsoft Foundation Classes a plus
- Business consulting background with application design and development experience in the financial industry

Reply to Dept. JDL522

Broadway & Seymour offers an outstanding compensation and benefits package. For immediate consideration, please mail your resume, along with salary history to: **Broadway & Seymour, Inc., Dept. _____, 128 S. Tryon St., Charlotte, NC 28202.** EOE. No phone calls please.

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Frostburg State University, one of eleven constituent institutions in the University of Maryland System, seeks Director of Academic Computing. Major responsibilities include planning, developing and managing diverse academic computing resources; implementing of computer based instructional technologies, networking, communications and software support and training. The Director will also explore alternative funding and research opportunities consistent with academic computing and university mission. Women and minorities are encouraged to apply.

MINIMUM REQUIREMENTS: Master's Degree. At least two years of relevant supervisory experience to a director of associate/assistant director of academic computing in higher education. Demonstrated technical competence & strong interpersonal & communication skills. Experience in academic computing support services, particularly wide-area & local-area networks, & with computer-based instructional technologies for classroom applications.

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Direct position questions to Dr. Charles Starrett, (301) 689-4297, & employment questions to Human Resources, (301) 689-4105 (Voice/TDD). To apply send letter of interest, resume, & three letters of recommendation from professional references by July 1, 1994, to: Frostburg State University, Office of Human Resources, ATTENTION: Director of Academic Computing Search, (Position #94-408-CW), Frostburg, MD 21532.

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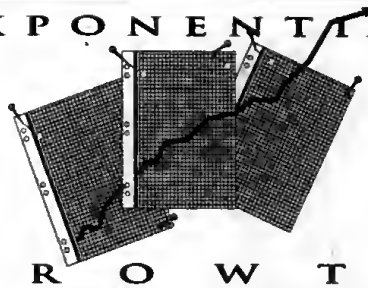
EXPONENTIAL



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Software Engineers can e-mail resumes to: software_jobs@intel.com

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Product Manager, International Markets

Duties: Provide information to product marketing and development personnel on any international issues which effect the sale of products outside the U.S. Act as a liaison between local country marketing management in Europe and product managers. Education marketing and development personnel to needs and cultural differences for marketing software products internationally. Assist product management in product design, marketing mix, roll-out and after launch sales. Coordinate product localization in key markets in Europe. Travel as needed to Europe and elsewhere.

Requirements: M.B.A. in Business Administration with emphasis in international marketing experience with high tech products in Europe.

Salary: $40,500/yr.

Location: Provo, Utah.

Send Resumes to: Pat Redington, Job Order 3018400, Utah Dept. of Employment Security, Immigration & Clearance Unit, 6th Floor, 140 East 300 South, SLC, UT 84111.

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- CAS, IDMS, ADSO
- AS/400, SYNON.
- SUN SYS. ADMIN.
- MS WINDOWS DRIVERS, C
- VISUAL BASIC, C, INGRES
- PC NETWORK TESTERS
- WINDOWS NT, DEV/TEST
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- ALPHA AXP/OSF1, C
- VISUAL C++
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CAREER SURVEY: Advanced Materials

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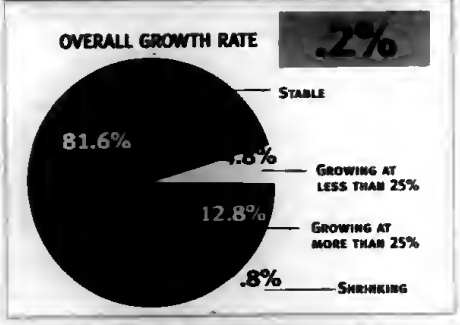

[illegible] involved in Advanced Materials

Survey conducted between February and April, 94.

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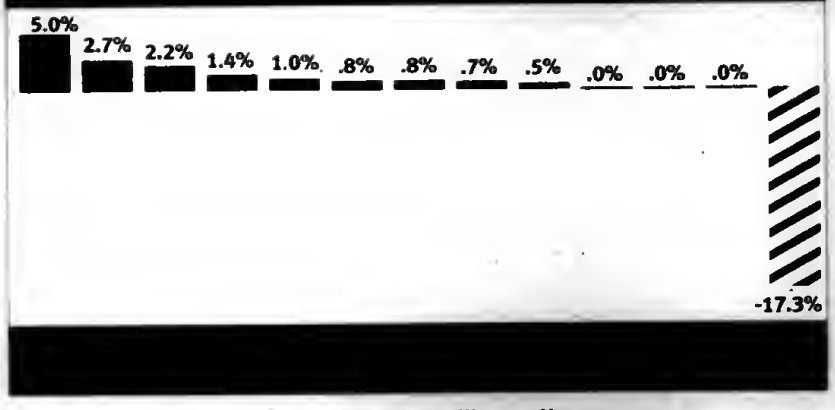
REGIONAL GROWTH ANALYSIS



CorpTech, a directory publisher in Woburn, Mass., tracks the U.S.' 35,000 technology manufacturers. This survey relates to the 25,252 tracked firms with fewer than 1,000 employees.

MANAGER, INFORMATION TECHNOLOGY: Dallas, Texas: Develop and prepare computer programs to process business procedures and analyze and solve business oriented computer problems relating to computer systems and electronic data processing equipment for business and professional clients with particular emphasis on business computer packages for the health care industry and financial institutions. Utilize the following hardware and software to design systems: IBM 3090, IBM 4381, IBM PC, Prime 750, NCR ATM 5070, Perkin Elmer, Telenet Packet Switching Network, MVS, VOS Unix, MS-DOS Oracle, DB2 CICS, MS-Windows, Visual Basic, Code Basic, Crystal Reports, Paradox for Windows, ACL (Audit Command Language), Windows SDK, SQL-Windows, COBOL C, PL/1, Fortran, Novel Netware, Netware API, CASE Tools such as ADW, IEF, System development methodologies such as SAAD (structured System Analysis and Design) and communication protocols such as X.25 RS-232C, BSC 3270 and ISO 8583. Study and develop clients' existing data handling systems to evaluate effectiveness and develop new systems. Consult with clients' technical managers and systems analysts to clarify the program intent, recommending changes and performing analysis in order to translate clients' requirements into systems development. Interpret computer programs and train clients' in-house MIS technical staff in program use. Develop software package for Healthcare Data Analysis using Open Systems Architecture and software security. Discuss the business needs of client requirements, recommending modification to the standard packages such as ONE, Claims Data Management system, ERISCO Health claims processing system. Plan and prepare technical reports, memorandum and instructional material pertaining to the functioning of the operational system software package. Consult with clients on implementing client server software development. Special Requirements: Must be capable of developing and designing GUI-based client server Open System applications capable of handling multiple databases. Apply expertise in building interactive voice response systems using client server approach and X.25 protocol. Design and develop data conversion Tools and techniques using rule based algorithms. Knowledge of IBM System 88 (Stratus) i.e. development of Fault Tolerant Computer). 40 Hours per week. $53,400.00 per year. Bachelor's Degree in Engineering or Computer Science. Two years experience in job offered or two years experience as Senior Systems Analyst. Apply at the Texas Employment Commission, TEC Building, Austin, Texas 78778. J.O # TX7214726. Ad Paid by An Equal Opportunity Employer.

Software Engineer, II

Duties: Design, code and port functional components for use in Netware for UNIX using ANSI C. Port, integrate and debug a NetWare implementation of x.500 Directory Services into NetWare for UNIX using ANSI C, OSI and x.500. Write and port code for diverse hardware architectures, including Intel, SUN Sparc, IBM Risc & Motorola 68K) under different operating systems environments (SUNOS, UNIX, SVR4.2, AIX, UnixWare). Set up and administer a network of UNIX workstations for development using TCP/IP, DNS, NIS and IPX/SPX. Administer software project using SCCS, RCS.

Requirements: M.S. in C.S./E.E. with emphasis in NetWorking protocols or B.S. plus two years of experience in NetWare protocols. Must know ANSI C, UNIX, SUNOS, AIX, SVR4.2, DOS, OS/2, Macintosh, x.500, TCP/IP, DNS, NIS, NetWare, IPX/SPX, SCCS, & RCS.

Salary: $43,000/yr.

Location: Sandy, Utah.

Send Resumes to: Pat Redington, Job Order 3018405, Utah Dept. of Employment Security, Immigration & Clearance Unit-5th Floor, 140 East 300 South, SLC, UT 84111.

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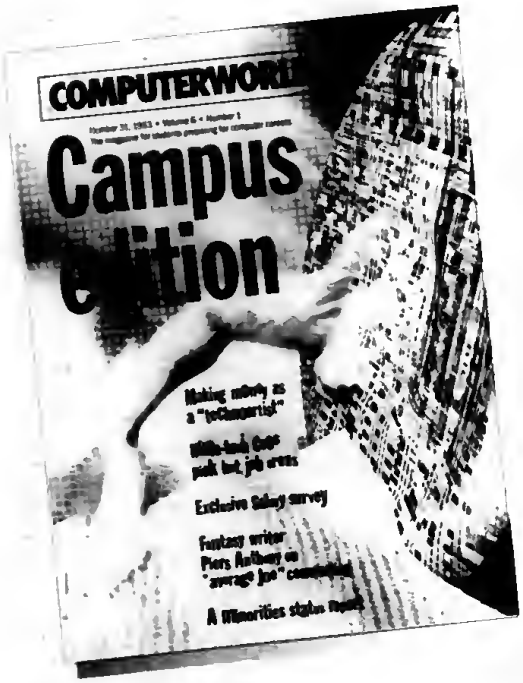

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Five products that make your life easier

By Michelle Louzouo

Cleaning out clutter

In most Windows environments, remnants of once-used applications take up valuable system memory. To make matters worse, these program fragments can cause compatibility problems.

Jeff Hicok, a network specialist at Valspar Corp. in Minneapolis, discovered software that unclogs his system — the Uninstaller from MicroHelp in Marietta, Ga.

According to Hicok, removing an application from Windows isn't easy. If you delete the program icon and the subdirectory, there are still program lines in the WIN.INI, SYSTEM.INI and other associated files. Uninstaller gets rid of every aspect of the package for you. "The Uninstaller buys you more space on your hard drive," Hicok says.

Recently, Hicok used Uninstaller to solve a compatibility problem. When he was upgrading from Word 2.0 to Word 6.0, error messages said the drive was write-protected.

"It turned out that something from the previous version was causing a conflict with Version 6.0. By removing all the pathing from INI, we solved the problem," he says.

In the past, Hicok might not have resolved this incompatibility. "Windows works by using an association of files. One file executes a second, which executes a third, and so on. The path is extremely difficult to trace," he says.

Talking in pictures

Before Don Kociela, manager of end-user computing at Telmark, Inc., installed Full Shot 2.0, users interrupted him 10 to 20 times a day with their problems. Application difficulties required a support person to drop everything and attend to the problem.

Full Shot 2.0 from Inbit in Mountain View, Calif., automatically prints out any screen from a Windows application. Without it, the user must transmit the screen to the clipboard, send that image to the paintbrush section, possibly edit out unwanted portions and then print it.

"Now users print out the pictures, give them to me, and I resolve the problems at the end of the day. My productivity has increased by 20% and theirs has improved by about 30%," Kociela says.

Full Shot automatically prints the entire screen simply by pressing a few buttons. "From a productivity standpoint, this has helped tremendously," Kociela says.

Keeping employees at home

In 1992, the city of Baltimore enacted an anti-pollution law restricting the number of people traveling into the city. Large companies with scores of commuting employees were one of the legislation's top targets. In turn, Baltimore Gas & Electric Co. purchased a turnkey system to enable employees to telecommute and thereby help the company comply with the law.

The utility installed the Cubix System 1000 from Cubix Corp. in Carson City, Nev. The combination of an 1486 processor and software allows the company's 50 information systems analysts to dial into the network and work from home.

At this point, however, the Baltimore company is still experiencing rollout problems.

"A couple of people have been automatically logged off the system," says Timothy Everd, a network consultant. "It could be the phone line, the Cubix box or a couple of other things."

Although there are many similar products, Cubix offers remote control. When a user dials into the network, the Cubix box does all the work. All that is communicated over the phone lines are key strokes and screen images.

Faster network diagrams

At McLean Hospital in Belmont, Mass., creating a much-needed network diagram was a cumbersome chore.

"I used to draw diagrams by hand or with a computer-aided design package," says William G. Roberts, systems/network manager.

"This was very difficult because I often had to create my own pictorial representations of the various objects on the network," he says.

Three months ago, the company started using NetViz from Quyen Systems, Inc. in Rockville, Md. The package comes with a library of ready-made icons that represent different aspects of a network. It can create network and data-flow diagrams.

"Now, I can document the whole network in 20 hours, while I used to easily spend that amount of time just documenting a small part of it," Roberts says.

Portable data scopes

Network analysts need the strength of Hercules. In many cases, they must pry heavy rack-mounted data scopes, which weigh 35 to 40 pounds, off their perch and move them.

At Marine Midland Bank in Buffalo, N.Y., muscles are now being flexed only in the gym. The financial institution now uses Feline from Frederick Engineering, Inc. in Columbia, Md.

The product consists of a board and software that can be placed in a PC or, as in the bank's case, a laptop.

Feline analyzes a variety of wide-area network activities such as monitoring poll responses and testing bit error rates. In addition, it records information for further analysis.

"If we had a problem before, we had to pull the data scope off the wall and carry it to where we needed it," says Dirk Manspeaker, a senior technical specialist. "It was so cumbersome that we didn't even bother taking it to remote locations. This made the diagnostic process longer since we had to analyze everything piecemeal."

Manspeaker says Feline has increased the bank's mean time to problem resolution by 25%.

BB&T Financial Corp. in Wilson, N.C., uses a similar product, LANPharoah, from Azure Technology, Inc. Although pleased with its performance, BB&T says it may replace it with lighter handheld hardware analyzers. •

Louzoua is a free-lance writer in New York.

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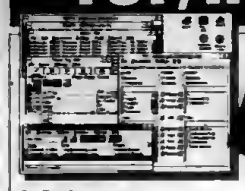

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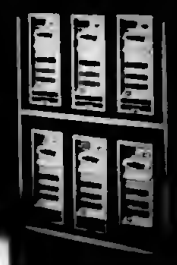

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Spectra Equipment	(800) 745-[illegible]
TBI	(800) 870-[illegible]
Time Software Corp.	(800) 338-[illegible]
World Data Products	(800) 325-[illegible]

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Today, the pharmaceutical/biotechnology industry is an intensely competitive business. To gain an advantage, a young and fast growing company called ARIAD Pharmaceuticals has structured its organization around Lotus Notes,® the industry standard in groupware.

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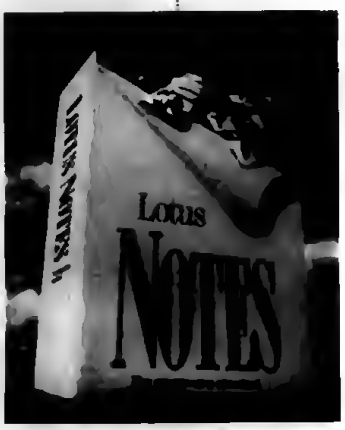
When ARIAD Pharmaceuticals started setting up their business and scientific systems back in 1992, they chose to make Lotus Notes the foundation. They felt that collaboration between scientists and management was essential to accelerating the drug discovery and development process. With Notes, every scientist and manager can always have the most current findings on each project, with up-to-the-minute updates on critical issues. Easily accessing the collective knowledge and expertise of other scientists from different fields, all team members can contribute to the progress of the team, wherever they are.



Scientists traveling to labs and conferences around the world stay current and actively participate using Notes and their Apple® PowerBooks™ over an OS/2 server.

Naturally, in such a highly competitive field, the sophisticated security available with Notes is a critical feature.

Now the whole company uses Lotus Notes, over 100 users in all. Databases range from the project management of the latest new drug compounds being developed and tested, to the corporate calendar and employee handbook (which is instantly updatable and universally available to all employees).

Because all the project and product development information is already in a Notes database, it's easy for ARIAD's patent attorney to stay on top of advances, discoveries and other timely developments from ARIAD's scientific community: This improved flow of information makes for better interaction with the patent office and FDA. This means better results in the marketplace.

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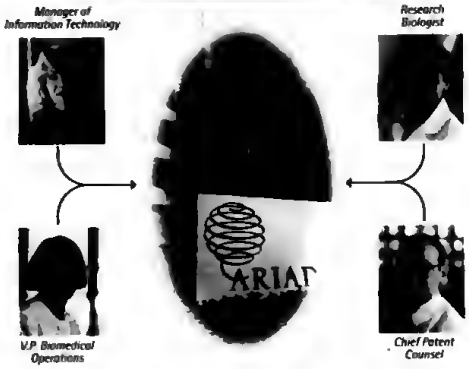

ARIAD's *Notes administrator* sets up a new project database. *Scientists* and *managers*, working on-site and remotely, share research results, ideas and progress reports in real time. With everyone working together concurrently, ARIAD's *patent attorney* monitors the project, compounds new ideas, to make informed decisions on protecting ARIAD's inventions. Then he uses the Notes database to get the information for quickly drafting patent applications.

VISIT US AT COMDEX IN ATLANTA, BOOTH #7322.

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Gainers

Percent

Abit Computer Systems	37.3
Marquistics Group Inc.	29.6
Microage Inc.	26.4
Centigram Communications	25.3
Powersoft	25.9
Creative Technologies Inc.	21.3
Computer Associates	16.0
Sapiens Intl. Corp. N.V. (L)	16.2

Dollar

Powersoft	9.75
Compaq Computer Corp	7.25
Texas Instruments	6.63
Microage Inc.	5.75
Creative Technologies Inc.	5.50
Computer Associates	5.00
Centigram Communications	5.00
Wall Data Inc.	4.38

Losers

Percent

Telebit Corp.	-44.1
Weitek (L)	-40.4
Gandalf Technologies Inc. (L)	-37.5
Xilinx	-19.9
Racotek Inc.	-18.3
Integrated Silicon Systems	-17.6
Borland Int'l. Inc. (L)	-16.3
DSC Communications	-13.9

Dollar

Xilinx	-9.75
DSC Communications	-9.21
Integrated Silicon Systems	-4.50
Wellfleet Communications	-4.13
Telebit Corp.	-3.75
Weitek (L)	-3.63
Paychex	-2.50
Netmage Inc.	-2.50

TECHNOLOGY STOCKS WERE IN THE GRIST OF TAKING ANOTHER BEATING BADLY LAST WEEK, BUT THE TIDE TURNED ON WEDNESDAY TO MORE FAVORABLE TRADING. MERGER AND ACQUISITION NEWS DROVE SEVERAL TOP GAINERS, INCLUDING COMPUTER ASSOCIATES INTERNATIONAL, INC., ELECTRONIC DATA SYSTEMS CORP. AND THE ASK GROUP, INC. (SEE STORY PAGE 1).

Analysts call for safety 'Net

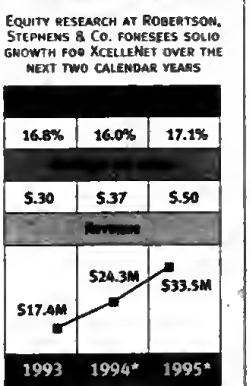
Picking investment winners in the current topsy-turvy market is a tough assignment, but analysts at two Wall Street firms think **XcelleNet, Inc.** (XNET) is a safe choice.

XcelleNet is a purveyor of "remote enterprise applications" or "mobile business process automation," depending on which report you read. The Atlanta-based company's RemoteWare products help build and manage transaction processing applications for remote workers who access centralized data.

RemoteWare AppliComms provides application development tools, while RemoteWare CMS handles data compression, software distribution and communications session scheduling. Appropriate applications could include logging sales results, conducting electronic commerce and tracking mobile fleets.

Crystal ball

EQUITY RESEARCH AT ROBERTSON, STEPHENS & CO. FORESEES SOLID GROWTH FOR XCELLENET OVER THE NEXT TWO CALENDAR YEARS



*Estimates

Endorsements for the company's stock came from Alex. Brown & Sons, Inc. and Robertson, Stephens & Co. Both firms said XcelleNet's products are unique and geared to a market with excellent potential.

One risk factor cited by analysts was the specter of bigger competitors such as **Microsoft Corp.** (MSFT) and **Novell, Inc.** (NOVL). However, Alex. Brown & Sons analyst Chris Mortenson indicated that those companies are focused on a different kind of mobile worker who is less interested in transaction processing-oriented computing.

XcelleNet went public in mid-April. On May 10, the company reported first-quarter earnings per share of 13 cents. The stock price has held steady above 12 since the announcement, up slightly from the initial public offering price of 11.

—Derek Slater

Exch	52-Week Range			May 20 1994 Price	Net Chg	Wk Pct Change
Communications and Network Services						UP 1.66%
OTC	63.75	19.63	3COM Corp	53.00	2.25	4.1
NYS	45.90	35.63	AMERITECH Corp	39.50	1.25	3.3
NYS	91.00	49.50	AT&T	56.75	3.75	7.1
OTC	36.50	13.00	Banyan Systems Inc.	15.25	0.13	0.8
NYS	69.13	49.00	Bell Atlantic Corp	53.88	2.88	5.6
NYS	63.88	51.50	Bell South Corp.	60.38	2.63	4.1
NYS	21.50	4.50	Bolt, Beranek & Newman	12.50	1.63	14.9
OTC	35.75	9.50	Brooktrout Technology	13.75	0.25	2.0
NYS	132.50	87.50	Cabletron Systems	96.25	4.00	4.3
OTC	43.00	17.00	Ceantigram Communications	74.75	5.00	25.3
OTC	60.25	34.75	Chipcom Corp.	36.75	-2.50	-6.4
OTC	40.75	20.13	Cisco Systems Inc	23.25	0.00	0.0
OTC	19.38	9.35	Compression Labs Inc	12.13	1.00	7.6
OTC	12.38	5.13	Computer Network Tech.	7.50	-0.19	7.4
OTC	36.00	8.50	CrossComm	10.63	0.00	0.0
OTC	3.38	1.50	Data Switch Corp	2.13	-0.25	10.1
OTC	73.13	40.63	DSC Communications	48.88	-9.25	-15.9
OTC	3.50	0.63	Gandalf Technologies Inc. (L)	0.63	-0.38	-37.1
NYS	12.63	8.00	General Datacomm Indus.	12.50	-0.63	-4.8
NYS	39.88	29.50	GTE Corp	31.75	-0.13	-0.4
NYS	93.97	74.44	ITT Corp.	86.50	4.25	5.2
OTC	29.88	21.38	MCI Communications Corp	24.13	1.63	7.3
OTC	7.75	1.50	Microcom Inc	1.88	0.00	0.0
OTC	47.00	23.00	NetManage Inc.	33.50	-2.50	-6.9
OTC	7.35	3.50	Netrix Corp	6.13	0.13	2.1
OTC	11.75	4.75	Network Computing Devices	5.50	-0.25	-4.3
NYS	13.13	9.63	Network Equipment Tech	7.63	-0.13	1.6
OTC	23.38	8.88	Network General	35.63	-1.13	-6.7
OTC	10.13	6.38	Network System Corp.	6.75	0.31	4.8
OTC	71.88	33.31	Newbridge Networks Corp.	44.13	2.00	4.3
NYS	36.63	21.38	Northern Telecom Ltd.	31.50	1.38	9.6
OTC	33.50	15.38	Novell Inc.	17.50	-0.38	2.1
NYS	48.88	33.25	Nynex Corp	38.38	2.25	6.2
OTC	30.00	18.75	Octel Communications Corp (L)	20.25	1.00	5.2
OTC	18.25	9.00	Optical Data Systems Inc.	16.23	0.00	0.0
OTC	7.50	3.50	Penril Data Comm Networks	5.25	-0.38	-6.7
OTC	27.25	10.00	Picturetel Corp	12.13	-0.63	-4.9
OTC	6.25	3.63	Proteon Inc.	5.63	-0.13	-2.2
OTC	14.38	9.63	Racotek Inc	6.63	-1.90	-18.5
NYS	39.88	26.88	Scientific Atlanta Inc	34.75	1.13	3.3
NYS	47.00	36.75	Southwestern Bell Corp.	41.00	1.75	4.3
NYS	40.23	29.63	Sprint Corp	37.13	0.25	0.7
OTC	26.75	14.50	Standard Microsystems Corp.	16.56	0.31	1.9
OTC	33.73	10.73	Stratacom Inc.	23.00	0.50	1.7
OTC	43.75	17.25	Synoptics Communications (L)	19.50	0.75	4.0
OTC	15.35	2.88	Telebit Corp	4.75	-1.75	-44.1
OTC	46.00	20.25	US Robotics	31.13	0.63	2.0
NYS	50.75	38.25	US West Inc. (L)	40.50	1.50	3.8
OTC	43.88	19.38	Wellfleet Communications (L	28.50	-4.13	-12.6
OTC	28.25	11.50	Xylogic	17.25	0.00	0.0
OTC	30.00	13.75	Xyplex Inc	17.75	1.21	7.8
PCs and Workstations						UP 1.25%
OTC	7.50	2.63	Advanced Logic Research	4.88	-0.19	3.7
OTC	58.75	22.00	Apple Computer Inc	35.75	1.50	5.0
OTC	33.00	13.75	AST Research Inc	15.25	0.25	1.7
NYS	113.50	43.13	Compaq Computer Corp.	111.00	7.25	7.0
OTC	32.75	13.50	Dell Computer Corp.	24.94	0.50	2.3
OTC	25.00	12.38	Gateway 2000 Inc. (L)	14.38	1.50	11.7
NYS	93.63	64.38	Hewlett Packard Co.	82.50	2.75	3.4
NYS	36.88	16.00	Silicon Graphics	23.63	0.50	2.2
OTC	32.63	19.75	Sun Microsystems Inc. (L)	21.13	0.00	0.0
NYS	50.75	28.13	Tandy Corp.	37.13	1.00	2.8
OTC	5.13	3.50	Zeos International Ltd.	7.50	-0.38	-13.0
Large Systems						UP 0.05%
ASE	7.88	4.38	Amdahl Corp	7.13	0.13	1.9
NYS	7.63	3.63	Convex Computer	4.50	-0.13	-3.7
OTC	6.50	0.50	Cray Computer	1.44	-0.06	4.1
NYS	33.75	19.13	Cray Research Inc. (L)	20.63	0.38	1.9
NYS	11.88	6.63	Data General Corp	7.68	0.13	1.6
NYS	47.13	18.25	Digital Equipment Corp	23.00	1.75	8.2
NYS	52.25	35.00	Harris Corp	44.25	1.63	3.8
NYS	91.88	40.63	IBM (H)	61.88	4.25	7.4
OTC	25.75	2.75	Kendall Square Research	3.21	0.00	0.0
OTC	18.75	8.25	NetFrame	10.13	-0.38	3.6
OTC	26.00	4.25	Parallan Computer	6.75	-0.13	-1.8
OTC	23.25	6.30	Pyramid Technology (L)	7.35	-0.25	-3.3
OTC	23.35	11.13	Sequent Computer Sys.	14.38	1.38	10.6
OTC	6.84	1.75	Sequoia Systems Inc.	4.19	0.19	6.7
NYS	63.25	20.25	Stratus Computer Inc.	25.75	2.63	9.7
NYS	16.38	8.50	Tandem Computers Inc.	11.50	0.50	4.5
OTC	30.00	9.75	TriCord Systems (L)	12.50	1.63	14.9
NYS	16.50	9.88	Unisys Corp.	11.50	1.25	12.2
Software						UP 0.63%
OTC	37.00	16.25	Adobe Systems Inc.	27.00	3.88	16.1
OTC	34.50	13.50	Altos Corp.	28.63	1.88	7.0
OTC	8.88	5.00	American Software Inc.	5.00	-0.25	-4.8
OTC	15.75	6.75	Ask Computer Systems	12.88	3.50	37.3
OTC	61.75	37.00	Autodesk Inc.	50.13	-1.38	2.7
OTC	4.50	2.00	Bachman Info Systems	2.19	0.06	3.0
OTC	34.00	20.50	BGS Systems Inc.	23.75	-0.75	-3.3
OTC	71.00	43.00	BMC Software Inc.	33.75	-1.00	1.8
OTC	29.13	21.50	Boole & Babbage (H)	29.33	1.38	1.0
OTC	37.00	9.00	Borland Int'l. Inc. (L)	9.00	-1.75	16.3
OTC	25.00	9.50	Brock Control Systems Inc	25.00	-0.75	-3.4
OTC	4.63	2.75	CE Software	3.88	-0.13	-4.2
ASE	30.34	16.91	Cheyenne Software Inc	20.75	0.13	0.6
OTC	14.25	6.25	Cognos Inc	11.13	0.00	0.0
NYS	44.88	20.50	Computer Associates	35.50	5.00	16.4
NYS	5.38	2.13	Computervision Corp.	3.88	0.13	3.3
OTC	48.75	21.00	Compuware Corp	44.00	1.25	2.9
OTC	33.75	3.73	Consumer Inc. (H)	13.75	1.25	10.0
OTC	23.38	7.38	Corel Corp	20.63	-1.25	5.7
OTC	7.75	3.38	Easel Corp	4.25	0.00	0.0
OTC	29.25	11.00	Felmet Corp.	29.25	1.25	6.8
OTC	35.00	3.00	Ath Dimension (L)	5.00	-0.38	-7.0
OTC	12.50	5.25	Frame Technology	11.88	-0.06	-0.5
OTC	13.00	7.00	Group I Software	7.50	0.00	0.0
OTC	31.75	-12.00	Gupta	16.38	2.13	14.9
OTC	12.00	7.35	Hogan Systems Inc.	9.38	-0.21	2.8
OTC	29.50	16.00	IMRS	22.50	1.75	8.4
OTC	44.75	12.50	Information Resources	34.25	-0.63	-4.2
OTC	27.25	14.25	Informix Corp. (L)	15.75	0.75	5.0
OTC	12.38	8.50	Intergraph Corp.	9.38	-0.06	-0.7
OTC	9.25	6.88	Interbiat Inc.	6.00	-0.25	-4.0
OTC	15.50	4.25	Intersolv Inc.	13.50	0.75	7.0
OTC	50.00	25.25	Intuit Inc.	32.25	1.50	4.9
OTC	18.75	8.50	Knowledgeware Inc	10.50	0.35	3.4
OTC	37.00	13.50	Lotus Corp.	28.00	-0.88	3.1
OTC	86.50	30.21	Lotus Development	59.50	-0.25	-0.4
OTC	19.50	11.50	Magic Software Enterprises	11.75	0.25	2.2
OTC	18.50	6.25	Marquistics Group Inc	8.75	2.00	29.6
OTC	10.00	3.63	MathSoft	3.88	0.00	0.0
OTC	31.21	4.50	McAfee Associates	6.25	-0.75	2.9
OTC	17.25	8.38	Mentor Graphics	11.25	0.00	0.0
OTC	36.00	11.50	Micro Focus	16.38	0.21	1.6
OTC	11.63	4.75	Microgate Inc. (L)	5.63	0.38	7.1
OTC	98.25	70.38	Microsoft Corp (H)	97.63	1.00	1.0
OTC	37.75	19.88	Oracle Corp	31.75	0.75	2.4
OTC	44.75	23.75	Parametric Technology	29.63	2.13	6.7
OTC	24.50	15.50	ParcPlace Systems Inc. (L)	18.00	1.50	8.1
OTC	41.38	36.00	Peoplesoft	31.63	4.00	14.5
OTC	6.25	3.50	Phoenix Technologies	3.06	-0.06	-1.7
OTC	69.50	22.88	Powersoft	56.25	9.75	21.0
OTC	39.75	3.50	Platinum Software	5.94	0.31	5.8
OTC	15.25	7.25	Platinum Technology	13.88	0.69	5.2
OTC	80.25	33.50	Progress Software Corp.	37.75	0.75	2.0
OTC	3.81	1.94	Quantrodec Office Sys.	2.81	0.00	2.3
OTC	32.00	13.00	Rainbow Technologies Inc. (L)	15.75	2.00	14.5
OTC	11.38	4.00	Rasteops	3.38	0.38	7.9
OTC	14.50	3.75	Ross Systems	4.63	-0.63	-11.9
OTC	28.75	3.88	Sapiens Intl. Corp N.V. (L)	5.38	0.75	16.3
OTC	14.00	9.75	Software International Inc.	11.50	0.13	1.1
OTC	8.63	3.75	Software Publishing Corp. (L)	4.38	-0.13	-2.8
OTC	17.25	7.75	Software Toolworks Inc.	14.50	0.00	0.0
OTC	13.75	6.25	State of the Art	7.50	-0.26	-3.2
NYS	35.63	17.63	Sterling Software Inc	30.50	-0.13	-0.4
OTC	21.63	9.50	Struct. Dynamics Research (L)	11.38	1.13	11.4
OTC	54.88	25.75	Symantec Inc.	40.75	-0.75	-1.1
OTC	30.50	10.88	Symantec Corp	14.50	1.50	11.5
OTC	52.75	11.75	SynOpsys	38.25	2.50	6.9
OTC	24.25	12.00	System Software Assoc	13.75	1.25	10.0
OTC	6.75	2.88	Tonzinc Corp	4.00	0.06	1.6
OTC	30.00	16.50	Vieworight Systems	20.50	-0.50	-2.4
OTC	13.25	5.50	Walker Interactive Systems	7.63	0.38	5.2
OTC	60.00	17.50	Wall Data Inc.	37.00	9.38	13.6
Semiconductors						DIP 2.16%
NYS	32.75	16.75	Advanced Micro Devices	25.38	1.75	7.4
NYS	31.13	19.63	Analog Devices Inc	27.88	1.38	5.2
OTC	27.00	10.88	Atmel Corp (H)	22.88	-1.88	-7.5
OTC	7.50	3.25	Chips and Technologies	4.38	-0.25	-5.4
OTC	44.63	15.75	Cirrus Logic	32.06	-1.19	3.6
NYS	19.88	11.25	Cypress Semiconductor Corp.	15.00	0.11	0.8
NYS	20.00	13.00	Dallas Semiconductor	17.75	0.38	2.2
OTC	27.75	19.75	Integrated Silicon Systems	21.00	-4.50	-17.6
OTC	74.50	49.25	Intel Corp.	60.21	1.75	3.0
NYS	23.38	12.75	LSI Logic Corp	23.00	2.88	14.1
OTC	26.75	12.25	Lattice Semiconductor	16.00	0.75	4.9
NYS	39.91	11.25	Micron Technology	33.88	1.50	4.6
NYS	54.88	59.88	Motorola Inc.	47.63	3.00	6.7
NYS	25.00	14.21	National Semiconductor	19.75	0.88	4.6
OTC	18.13	6.50	Sierra Semiconductor	7.50	-0.50	-6.3
NYS	89.50	35.75	Texas Instruments	78.75	6.63	9.2
OTC	18.88	7.38	VLSI Technology	14.00	-0.38	-2.6
OTC	14.90	5.38	Weitek (L)	5.88	2.63	-44.4
ASE	20.38	3.63	Western Digital Corp	13.50	0.13	0.9
OTC	39.75	29.75	Zilinx	39.25	9.75	-19.9
OTC	40.75	22.00	Zytec Inc.	33.50	1.00	-2.9
Peripherals and Subsystems						UP 1.11%
OTC	30.50	16.50	American Power Conversion	21.75	1.75	9.0
OTC	24.75	17.13	Barcotec Inc.	19.00	1.50	7.0
OTC	6.00	3.25	Cambex Corp.	3.63	0.25	8.4
ASE	8.25	2.63	Conrhythmic Corp.	3.38	-0.13	3.6
NYS	20.50	9.00	Conner Peripherals	13.00	0.63	4.7
OTC	39.25	17.50	Creative Technologies Inc	30.63	5.38	21.1
OTC	24.75	4.75	Data Race Inc. (L)	3.75	0.25	4.5
ASE	11.63	4.13	Dataram Corp	4.63	-0.36	-5.1
NYS	23.00	7.50	3M Corp	17.13	3.88	32.3
OTC	8.25	3.13	Emulex Corp	5.44	0.31	0.3
OTC	21.00	16.25	Evans & Sutherland	17.00	0.00	0.0
OTC	22.50	7.50	Exabyte	14.34	-0.00	-0.4
OTC	34.00	7.25	Intelligent Info. Systems (L)	8.00	0.50	6.7
OTC	5.00	2.00	Iomega Corp	2.31	-0.13	-5.6
OTC	9.75	5.75	IPL Systems Inc.	7.00	-0.38	-5.3
OTC	28.50	13.75	Kodiak Inc.	21.25	2.50	13.3
OTC	8.63	4.38	Maxton Corp	6.00	-0.25	-4.0
OTC	8.75	4.88	Micropolis Corp	6.88	0.25	3.8
OTC	22.50	10.00	Pinnacle Micro Inc.	14.50	-0.25	1.7
OTC	9.75	6.25	Printronix Inc.	8.13	-0.38	-3.9
NYS	16.38	7.38	QMS Inc	7.75	0.13	1.6
OTC	20.21	9.38	Quantum Corp	13.13	1.13	8.0
OTC	9.13	3.13	Radius Inc	6.13	0.25	4.3
NYS	17.75	8.13	Recognition International (L)	9.63	0.25	2.7
OTC	6.88	5.63	Rexon Inc.	6.00	0.13	2.1
OTC	28.75	14.38	Seagate Technology	22.63	0.13	0.6
NYS	42.00	21.75	Storage Technology	28.75	0.75	2.7
NYS	33.38	23.38	Tektronix Inc.	29.50	1.00	3.5
NYS	104.88	69.88	Xerox Corp	102.38	3.00	2.9
Services						UP 1.13%
OTC	23.11	14.88	American Mgmt. Systems (H)	22.00	-0.75	3.3
NYS	4.25	2.38	Amdahl Corp Inc	3.38	-0.13	3.6
OTC	23.50	16.50	Analysts Int'l.	16.00	-0.75	4.5
NYS	56.88	46.88	Auto Data Processing	51.25	1.11	2.7
OTC	18.25	8.25	Cambridge Tech. Partners	16.25	0.25	1.6
NYS	24.88	14.00	Cerridian Corp	23.25	-0.13	-0.5
NYS	24.25	13.88	Computer Sciences Corp	20.00	1.88	10.5
OTC	12.50	4.84	Computer Horizons	19.00	-0.63	-3.9
NYS	43.75	24.75	Computer Sciences (H)	43.13	1.25	3.0
NYS	8.88	6.00	Computer Task Group	8.75	0.50	6.1
NYS	35.00	15.13	CompuSA Inc. (L)	15.75	-0.13	0.8
OTC	13.50	7.75	Corvision Data Systems Inc.	10.63	0.75	7.6
OTC	11.00	6.63	Egghead Discount Software	9.63	-0.25	-2.3
NYS	37.25	26.00	General Motors E (EDS)	37.25	4.25	13.0
OTC	22.75	10.50	Inacom Corp (L)	11.75	0.50	4.4
OTC	28.00	12.25	Intelligent Electronics	20.63	3.50	7.8
OTC	22.50	10.38	Mergent	15.75	-0.13	-0.8
OTC	32.50	8.46	Microage Inc	27.50	3.75	24.4
OTC	48.50	25.66	Paychex	34.25	-2.50	-6.8
NYS	39.88	21.63	Policy Management Sys.	31.00	0.75	2.5
NYS	34.88	17.88	Reynolds and Reynolds	21.38	1.36	6.9
OTC	28.50	15.13	SEI Corp	19.50	-0.75	3.7
OTC	29.38	17.50	Shared Medical Systems	23.63	-0.33	-0.9
OTC	12.63	5.63	SHL Systemhouse	8.88	0.00	0.0
OTC	30.75	11.00	Software Spectrum Inc. (L)	12.00	-3.75	-22.7
OTC	42.75	28.00	Sungard Data Systems	35.25	-0.75	-2.1

KEY: (H) = NEW ANNUAL HIGH REACHED IN PERIOD (L) = NEW ANNUAL LOW REACHED IN PERIOD

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Intel under attack

CONTINUED FROM PAGE 1

Potentially fueling more defections is Intel's decision to try to force the market to move to its high-end Pentium chip [CW, May 9]. That has outraged many in its core customer set — PC makers — as the move represents a flip-flop in chip strategy, and the Pentium is not as widely available as the 486.

Many of these vendors had been telling customers not to buy systems with the 60-MHz Pentium chip that is now Intel's designated high-volume processor, instead pitching the 33/100-MHz DX4 that Intel previously said would be its high-volume processor.

One vendor official, who asked not to be named, said, "Your story headline ought to be 'Intel screws vendors, so what else is new?'"

An executive at a different longtime Intel house said his company may stop using Intel as its sole chip supplier because AMD now appears poised to ship a faster 486 than Intel in the third quarter, and competitors will offer it.

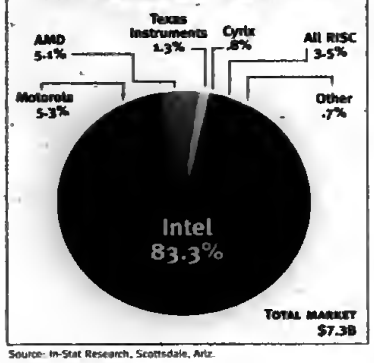
The steady stream of sniper fire includes the following:

- PowerPC partners and other RISC chip makers, which see a chance to grab some market share from Intel.
- Clone makers such as AMD and Cyrix, which are not only scoring contract wins but also striving to match Pentium performance levels.
- A disloyal user community, which cares only that its software runs, not what chip it runs on.
- The courts, which have given chip cloners victories in crucial copyright and patent cases that have allowed them to stay in business.

Wall Street, too, has started to frown on Intel since its record profits do not quite meet analysts' even higher expectations. And Andrew S. Grove, Intel chairman and chief executive officer, was quoted recently as saying that margins matter less than volumes, which can buoy profits if they rise dramatically.

Iron grip

Intel has the biggest bite of the chip business, though it has plenty of competitors



Source: In-Stat Research, Scottsdale, Ariz.

Drooling with anticipation

Some competitors are salivating at what they perceive as Intel's vulnerability.

"I expect they'll lose market share and be less profitable and that they won't enjoy the kind of growth they've had in the past," said Stephen Domenik, vice president of marketing at upstart Cyrix in Richardson, Texas. He boasted that Cyrix's still unseen M1 chip will establish Cyrix as the market's technology leader when it appears late this year and suggested that "then it's just a matter of achieving volume leadership."

For users, Intel's dominance seems to be of scant concern. Though chip prices have actually risen some 15% a year, system prices have not reflected this, according to Kimball Brown, an analyst at Computer Intelligence/InfoCorp.

And a confident Intel said it is all just history repeating itself.

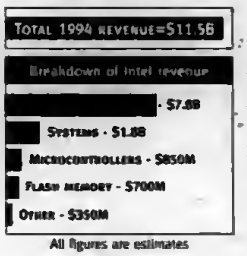
"Everything is different, and everything is the same. Do you remember [the ACE consortium]? Do you remember SPARC International?" said David House, Intel's senior vice president of corporate strategies. He was referring to groups that tried and failed to challenge Intel on the desktop.

The fledgling PowerPC standard, however, looks much more solid than the Advanced Computing Environment (ACE) ever did and has attracted the most attention from the market and Intel itself.

The joint effort by Apple Computer, Inc., IBM and Motorola, Inc. could pose the first real microprocessor challenge to Intel. Apple and IBM give PowerPC economies of scale through their unit volumes, and IBM and Motorola have semiconductor manufacturing might that rivals Intel's.

Chip-heavy

Intel officials say they have no specific plans to radically change their revenue mix



Source: Merrill Lynch & Co., New York

Still, it is too early to tell whether IBM and Apple will be able to capitalize on this promising technology, which lacks a united standard.

The PowerPC also lacks Intel's substantial base of software and compatible components, which has kept major PC makers from jumping on the bandwagon.

Gary Stimac, a senior vice president at Compaq, which has a PowerPC box under development in its lab, said, "We are doing the prudent technical and business thing, but we are not going to be a market maker."

Even Intel critics such as Linley Gwennap, editor in chief of *The Microprocessor Report* in Sebastopol, Calif., say the PowerPC and the Intel chip clone makers at best provide PC makers leverage on prices because Intel is the only vendor that can make tens of millions of chips.

A more immediate threat to Intel may be its own effort to get users to buy Pentium systems by scaling back production of its high-end 486DX chip, the DX4. It is creating a gap in its product line that AMD and Cyrix can be expected to attack like blood-crazed piranhas.

Chip prices will also be affected. "We expect microprocessor pricing to fall because what AMD and Cyrix bring to the party is price," said Tom Kurlak, an analyst at Merrill Lynch & Co. Kurlak said pricing pressures will hurt Intel's short-term profits, but he expects the company will bounce back in next year's second half, as Microsoft Corp.'s Chicago operating system helps spark the market to Pentium.

Despite any short-term impact, most observers expect competitors will not be able to take advantage of Intel's temporary weakness. AMD's capacity is constrained, and the ink on Cyrix's deal with IBM is barely dry. Moreover, even when AMD and Cyrix come out with Pentium-class chips, as they are expected to do in the latter half of next year, they will probably lag Intel on the performance curve.

Intel's David House: *Intel has seen it before*

Intel's constant push to the future has led it into new markets that could create new revenue streams. One case in point is its ProShare videoconferencing architecture. This kind of application would drive users to buy more powerful processors and could lead to PCs' becoming more widespread in homes, helping Intel sell more of its future generations of chips.

The volume potential if the PC becomes an "information appliance" that combines the computer, television and communications has Intel's eye, according to House (see story below).

Clearly, even if Intel slips a little, it seems in no danger of falling down the hill.

Shooting for standards

Intel is leveraging its dominance in the chip market to push standards in a variety of hardware and software arenas.

These attempts at standardization include:

- The Plug and Play standard: Initiated by Intel with Microsoft Corp., Compaq and Phoenix Technologies Ltd., it allows peripheral devices to communicate with the operating system and BIOS. It also eliminates the need for users to reconfigure systems when they install add-in cards and other peripherals.
- Peripheral Component Interconnect: A processor-independent local bus specification key to Plug and Play that will drive faster graphics performance.
- MultiProcessing Specification 1.1: A multiprocessor hardware and software specification that will allow shrink-wrapped operating systems and applications to run on symmetrical multiprocessing computers that use Intel processors.
- Personal Conferencing WorkGroup: A group that is attempting to spearhead a standard videoconferencing specification for PCs.
- Exchangeable Card Architecture (Exca): It seeks to build on Intel's expertise in the flash memory market in an effort to co-opt the PCMCIA standard.

Other Intel efforts include a foray into the personal digital assistant market as part of the Compaq-led Mobile Companion Group. Intel, with VLSI Technologies, Inc., will provide low-power, specially integrated chips to power handheld computers. — *Jaikumar Vijayan and Michael Fitzgerald*

Eyeing the sky

Intel and General Instrument Corp. last week said they were working with two cable companies to develop high-speed data transfer over cable lines.

Intel and General Instrument signed a deal with TeleCommunications, Inc. and Canada's Rogers Cablesystems Ltd. to bring digital data to the PC via cable lines. The computer firms signed a similar deal in 1993 with Viacom International, Inc. and Comcast Corp.

The thrust of the deal is to encourage more interactive use of PCs and bring on-line services over cable lines, which can send data approximately 1,000 times faster than a typical PC modem and handle about the same amount of data as a T1 line.

At the same time, Intel's videoconferencing efforts with the regional Bell operating companies will compete directly with its cable efforts in the interactive cable market.

"Intel's playing all sides here because they don't know who is going to win the war" between cable providers and telephone companies, said Frank Dzubeck, president of Communications Network Architects, Inc., a Washington consultancy.

— *Michael Fitzgerald*

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— Aldous Huxley

Douglas Kahn
CEO and president
Easel Corp.

"Remember the world is a tough place, so be tolerant and have empathy."

Isaac Kong
CEO
NetSoft

"What gets you there, keeps you there. Don't get attached to your successes. Keep looking for new challenges, the next horizon."

Michael Wilson
President
Uniface Corp.

— Wysiwyg compiled by Lisa Davidson; illustrations by Michael Moran

How to contact *Computerworld* editors:

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Inside Lines

Microsoft and Unisys don their Tuxedos

Unisys plans to announce tomorrow at DB/Expo '94 a pact with Microsoft to put the Unisys Tuxedo-compliant transaction processing monitor on Microsoft's Windows NT, said one Unisys insider. The Tuxedo port would be the first mainframe-caliber, online transaction processing tool available for Microsoft's fledgling operating system. And Unisys 2200 and A series mainframe users will gain a means to dabble with client/server, via a non-Unisys operating system, without tossing their tried-and-true Unisys systems.

Hopping on the ATM bandwagon

Dallas-based Olicom is readying a family of 51M and 155M bit/sec. ATM network interface cards that will ship late this year. The first card will be a 155M bit/sec. adapter with standard Sonet fiber connectors for EISA-based servers. PCI bus, XT/AT bus and PCMCIA versions will follow next year along with backbone products such as switches, bridges and routers, according to Max Jensen, CEO and president.

Behind the scenes at OSF, it's busy, busy

The Open Software Foundation's vendor members are already setting up their prestructured technology groups to take over projects from OSF's in-house software engineers. Peter Shaw, the OSF's director of business development, said last week that one such group is already meeting about DCE 1.2, and another has its sights on combined Motif 2.1 and CDE 2.0 projects. Although the groups are funded by the vendors that join them, they will not be "official" projects until the OSF board approves them, Shaw said. Don't want to lose touch with all the bureaucracy that made OSF such a success, eh?

Expose, Schmexpose ...

Novell senior vice president Michael DeFazio confirmed last week that the vendor has no product plans for the so-called Expose, a strange UnixWare/DOS 7 hybrid with a three-dimensional graphical interface that Novell was reportedly going to announce in July for a mere $99. Novell did demonstrate such technology at the Brainshare developer's conference in March along with other interesting, but experimental, technologies. But as Burton Group's Jodie Mardesich pointed out: What's the point of merging two unsuccessful desktop operating systems?

NetWare 4.1 alpha tests improve

Early indicators on Novell's latest alpha release of NetWare 4.1 is that it seems to be working fairly well, unlike its earlier alpha, which some users reportedly could not even get to run. However, several sites said they just received the release and have yet to thoroughly test key 4.1 features such as directory pruning and grafting and NetWare 3.x support.

Can IBM predict the future?

Among the bumper crop of products IBM will announce this week at DB/Expo '94 is a set of predictive database analysis tools for decision support on its SP2 parallel processors. IBM's tools are expected to have capabilities for predicting future events and optimizing logistical planning similar to those of the Darwin software that was introduced recently by Thinking Machines [CW, April 11].

Seems that a handful of bored vultures get their kicks hanging out around Compaq's Houston headquarters, perhaps thinking it's still 1991, when the company looked a lot like carrion. Those vultures do indeed serve as a reminder of grimmer times, said Ross Cooley, senior vice president of sales. "We know the buzzards are waiting for us to drop," Cooley said during a recent interview. "If I could open the window, I'd tell 'em to go see Michael Dell." For less hostile contact, why not get in touch with Computerworld *about news items or tips? Call our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News editor Maryfran Johnson can be reached by phone at (508) 820-8179, via the Internet at mjohnson@cw.com or through MCI Mail at 590-8017.*

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